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## CANNIBALISTIC RITES WITHIN MORTUARY PRACTICES FROM THE PALEOLITHIC TO MIDDLE AGES IN EUROPE

ABSTRACT: Cannibalism in the Paleolithic and prehistoric periods in Europe has been a controversial subject in discussions. Widely accepted or fully denied, it has attracted the attention of anthropologists and archaeologists for more than one hundred years. In this paper it will be shown that the human remains from the Krapina Neanderthal site have still a key position in current discussions on cannibalism in the Paleolithic. Although the anthropological context (uniqueness of bone assemblage, patterns of skeletal part representation, selection of disarticulated bones) and most of the artificial manipulations on human corpses and bones in Krapina (cutmarks, defect patterns in articular surfaces, bone breakage patterns) have to be interpreted as the result of mortuary practices with defleshing and dismemberment of corpses – there is evidence of cannibalistic rites in the Krapina assemblage, too: evidence of marrow extraction (perimortem bone fracturing, splitting diaphyses) and brain extraction (perimortem skull fracturing). Examples will be given for cannibalistic rites within mortuary practices at Paleolithic sites and in connection with human sacrifice at prehistoric sites in Europe.

KEY WORDS: Cannibalism – Paleolithic – Krapina – Mortuary practices – Burial – Human sacrifice

## INTRODUCTION

The question of cannibalism in the European Paleolithic was first introduced by Gorjanović-Kramberger in 1901 to the Krapina Neanderthals. Since that time the Krapina remains have very often been considered to provide or to deny evidence of cannibalistic rites in the European Paleolithic. Krapina is still a very important site and has a key position in the current discussion of cannibalism, too. But Krapina is not the only Paleolithic site where cannibalistic rites were celebrated within mortuary practices.

Cannibalistic rites in prehistoric Europe have been under discussion, too. Some anthropologists and archaeologists believe in prehistoric cannibalism, others deny it strictly and call it a fiction, a myth. But anthropologists have studied human remains from the Neolithic up to the Middle Age, mainly from sacrificial sites, and have discovered evidence of cannibalistic rites.

# KRAPINA – A KEY POSITION IN THE CANNIBALISM DISCUSSION

Krapina is a Neanderthal site in Europe with a unique human bone assemblage because of the very large number of human bones from a large number of individuals (males, females, adolescents, children). It is impossible to reconstruct the exact number of bones/bone fragments discovered by Gorjanović-Kramberger at the rock-shelter between 1899–1905. In the illustrated catalogue of the Krapina hominid remains by Radovčić *et al.* (1988) 233 skull fragments (+30 fragments which fitted to other skull fragments), 463 (+9) postcranial fragments and 107 isolated teeth are listed. The bone assemblage studied by the author in 1977 (the collection was restudied in 1981 and 1988) covered 278 skull remains, 395 postcranial bones and about 40 splitted diaphyseal fragments (Ullrich 1978). The stratigraphic sequence with human remains is divided into 9 levels, but the majority of bones was discovered in levels 3 and 4. The sequence was deposited very rapidly at the beginning of the Eemian interglacial. Unfortunately the exact stratigraphic position is known only for 103 skull fragments and 27 postcranial fragments (Radovčić *et al.* 1988).

The estimation of the minimum number of individuals (MNI) for Krapina is very difficult because of the fragmentary and broken conditions of the bones and missing data for an exact stratigraphic position of most fragments. It is impossible to assign the postcranial remains to single individuals. The estimated MNI differs remarkably: from  $\geq$  10 (Gorjanović-Kramberger 1906a) to 75–82 (teeth only; Wolpoff 1979), but the most reliable published minimum number of individuals is 23-35. We have made a new estimation of MNI based on the age, estimated sex, laterality, possible fitting to one individual and the stratigraphic data (so far known). Our results (unpublished data) point to a probable minimum number of 38 individuals based on cranial fragments: 2 infans I, 5 infans II, 1 infans/juvenis, 6 juvenis, 2 juvenis/adultus, 22 adultus. Because most of the postcranial elements (e.g. humerus and ulna fragments) cannot be paired morphologically the real number of individuals for adults is obviously much higher than the MNI and to calculate about 30-40 (or more). Also the real number of children/adolescents might be much higher than the MNI, if the calculation by Minugh-Purvis (1988) is exact. A number of 50-70 individuals, represented in the Krapina bone assemblage, is therefore a reliable estimation.

If we calculate only with a MNI of 40 each individual is represented by 7 cranial and 10–12 postcranial remains only! Provided that the burial hypothesis of Trinkaus (1985) – see below – is correct, about 6,700 postcranial elements would be missing in Krapina (calculated 180 postcranial bones per complete skeleton)!

## Cannibalism versus catastrophe versus burial versus mortuary practice hypothesis

The Neanderthal remains from Krapina have very often been studied by anthropologists during the last decades. Contrary to a relative conformity in evaluating the morphological characters and the phylogenetic position of the Krapina hominids there is a very great unconformity and controversy in interpreting the state of preservation, the patterns of skeletal part representation, the damage patterns and bone modifications of the Krapina human remains. Five hypotheses have been discussed in recent publications in order to evaluate the situation and life and death of the Neanderthal group at the rock-shelter about 130,000 years ago: the cannibalism hypothesis, the catastrophe hypothesis and the mortuary practice hypothesis.

### Cannibalism hypothesis

The question of cannibalism in the European Paleolithic was first introduced by Gorjanović-Kramberger in 1901

to the Krapina Neanderthals in order to explain the extreme fragmentation and the occasional burning of the human bones. He also could demonstrate blows on cranial fragments and show that the human bones in Krapina had been handled in the same way as animal bones (Gorjanović-Kramberger 1906a, 1909). These facts strengthened the hypothesis of cannibalism in Krapina – an explanation which has been frequently questioned, denied or ignored, but has been widely accepted by archaeologists as well as by anthropologists.

Gorjanović-Kramberger (1906a, 1909) had also the opinion that the inhabitants of the Krapina rock-shelter were caught napping by another Neanderthal group. This gave rise to the hypothesis of a "battle at Krapina" ("Schlacht bei Krapina" – Klaatsch 1920) and the co-existence of Neanderthals and modern *Homo sapiens* in the area of Krapina (Škerlj 1958) where the Neanderthals had been defeated and eaten by an unknown race of *Homo sapiens* (Škerlj 1939). In more recent time Tomić-Karović (1970), Smith (1976a, b) and others have revived the cannibalism explanation of the Krapina remains, but they have not given new details or arguments. Contrary to Orschiedt's (1999) opinion that there are still several information missing for Krapina to decide on cannibalism or burial, White (2004) has confirmed cannibalism at Krapina.

## Catastrophe hypothesis

Recently Boquet-Appel (1999) has published a new interpretation of the Krapina hominid sample based on the age distribution and the mortality profile. In his opinion the Krapina human remains should be explained as a result of a catastrophe, of a demographic crisis of the local group caused by a severe environmental fluctuation.

## Burial hypothesis

Contrary to the cannibalism hypothesis Trinkaus (1985) first introduced the burial hypothesis into the discussion on the Krapina remains. His review of the evidence of cannibalism tried to show that in Krapina

- the skulls "were broken postmortem from sediment pressure and movement and that their pieces became separated postdepositionally" (p. 206);
- the "fracture pattern of the Krapina diaphyses can... be explained as the product of sediment pressure acting on diaphyses of variable diameter and cortical thickness" (p. 207);
- it is "highly uncertain whether the marks", described by some authors as cutmarks, "evident on the Krapina bones accumulated from a variety of non-hominid processes or from human manipulations of the bones around the death" (p. 207);
- patterned preservation and breakage is "easily explained as the product of relative bone durability" and "postmortem attritional processes" (p. 208);
- disassociation of skeletal parts and scattering of the bones "could have been produced by a variety of processes, including rockfalls, sedimentary settling



FIGURE 1. Manipulations on human corpses and bone modifications in Paleolithic times.

of the deposits, the activities of other mammals... and human activities (e.g. building hearths) adjacent to buried partial skeleton" (p. 209).

Therefore it is "best to conclude that there is no evidence for cannibalism at Krapina" (Trinkaus 1985: 209). The rejection of cannibalism as an explanation leads Trinkaus to make comparisons in the patterns of preservation with other "buried" and "non-buried" Neanderthals as well as with skeletal samples from recent burials. The essential conformity with the "buried" samples suggests in the opinion of Trinkaus that the Krapina Neanderthals (about 43 individuals) "were rapidly buried by their kin or possibly by rockfall" (Trinkaus 1985: 213).

#### Secondary burial hypothesis

Russell (1987a), who has studied the Krapina material in detail, also concluded that the "morphology of the prehistoric breakage is inconsistent with the cannibalism hypothesis and support the hypothesis that prehistoric breakage was caused by sedimentary pressure and/or roof fall" (Russell 1987a: 373). But she recognized striations on the bone fragments as cutmarks, too. Russell (1987b: 394) believed that "the Krapina hominid remains were defleshed in preparation for secondary burial" to explain the anatomical location, gross appearance and frequency of occurrence of the incised linear striations on the Krapina remains. In a later paper Russell *et al.* (1988: 348) stated that "(1) evidence of secondary burial at Krapina is not as strong as previously suggested, (2) cannibalism is a viable rival hypothesis and (3) criteria other than cutmarks (archaeological context, bone breakage for marrow etc.) are crucial in interpreting the motive for defleshing of human bones." Turk and Dirjec (1991) have compared taphonomical analyses of the human remains from Krapina and of the *Ursus speleus* remains from Diveje habe 1 (Slovenia) and concluded that the results strengthen the secondary burial hypothesis for Krapina. According to Villa (1992: 96) "the available data are insufficient to resolve the question of cannibalism versus secondary burial in Krapina."

#### Mortuary practice hypothesis

A further hypothesis has been added to the discussion of the Krapina remains by Ullrich (1982, 1986, 1989). Detailed investigations on fossil human remains from more than 70 Paleolithic sites in Europe have clearly shown that artificial bone modifications sustained after death are very often to be found. Artificial bone modifications caused by tools result from manipulations on human corpses and on bones (*Figure 1*). It is very likely that these manipulations were done on individuals who died a natural death rather than on individuals who had been killed. Various forms of manipulations are known and they were probably carried out in order to obtain bones or broken bones of the deceased for celebrating mortuary ceremonies. Manipulations on human corpses were a frequent and widespread practice in Paleolithic times, not only in Europe, but also in Africa and

Asia. They cannot be explained as the result of cannibalism, but they were probably closely connected with ritual or cult ceremonies associated with death and therefore part of the social life of Paleolithic humans. In Europe two different strategies were manifested in mortuary practices and rites: (1) Mortuary practices based on disarticulated human bones resulting from manipulations (defleshing, dismemberment) on corpses of the deceased. After finishing mortuary practices the human bones were thrown away and became mixed with animals bones or were intentionally deposited or buried in the caves/rock shelters. (2) Mortuary practices and rites with the entire intact corpse of the dead (deposition, burial). Reflections on life and death in the Paleolithic are known since the late Homo erectus about 500,000 years ago and initiated necessarily reflection on the world humans were living and on the afterworld (Ullrich 1995, 1999a).

Le Mort (1981) has also studied the Krapina remains in detail and concluded that the artificial bone modifications resulted from manipulations on human corpses (defleshing, dismemberment, bone fragmentation) and that these manipulations were part of special mortuary practices celebrated in Paleolithic times. According to Le Mort there is however no evidence for cannibalism in Krapina.

## Evidence for mortuary practices in Krapina

In Krapina there are many facts supporting the mortuary practice hypothesis: bones or mainly broken bones of the deceased were intentionally brought into the rock-shelter; they resulted from manipulations on human corpses (ritual defleshing, dismemberment) and bones (fragmentation) outside the rock-shelter; only intentional selected bones/ broken bones were carried into the rock-shelter; after having celebrated mortuary practices inside the cave the human bones were thrown away and got mixed with animal bones. But there are also facts in Krapina which cannot be explained solely by the mortuary practices hypothesis. The situation was obviously much more complex.

## Patterns of skeletal part representation

We have analysed the skeletal part representation for 826 individuals from 320 Paleolithic sites in Europe and have found no differences either between adults (more robust bones) and infants (more fragile bones) or between males and females. But we have recognised different patterns of skeletal part representation between individuals represented by complete or nearly complete skeletons (about 5% of the Middle Paleolithic and 10% of the Upper Paleolithic individuals) and individuals represented by disarticulated bones only (100% of the Lower, 95% of the Middle and 90% of the Upper Paleolithic individuals). It is important to mention that 94% of the Lower Paleolithic, 76% of the Middle Paleolithic and 73% of the Upper Paleolithic individuals are represented by only 1–2 (mainly one) disarticulated bones.

The pattern of skeletal part representation for Krapina is similar to those of Middle Paleolithic individuals with disarticulated bones only, where parts of the cranium are generally represented in less than 20% of the individuals, parts of the postcranium in less than 5% and hardly more than 10% of the individuals. The Krapina pattern is also similar to those of prehistoric human non-buried samples, e.g. Oberdorla (a Germanic bog site of sacrifice) and Ralswiek (an early Slavonic cult site where humans had been sacrified) in Germany (*Figure 2*). The Krapina pattern of skeletal part representation does not show conformities with Paleolithic as well as recent human samples where complete intact corpses had been buried.

## Cutmarks

Numerous postcranial fragments (30.1%) and cranial remains (14.4%) show clear evidence of cutmarks at the site of muscle attachment, tendons and ligaments. They occur in different size and shape, partly parallel and stepwise in almost all claviculae, patellae and fibulae, but also in the costae, humeri, radii, ulnae, metacarpalia, coxae, femora, tibiae, tarsalia and metatarsalia - but not in the vertebrae and phalanges of hand and foot (Ullrich 1978). There are marked differences with regard to the frequency of cutmarks in the postcranial remains. Cutmarks on skull bones predominate in the mandibles, but do also occur in the frontal, parietal and occipital regions. Similar results were obtained by Le Mort (1981) and Russell (1987a) and others (e.g. T. D. White - pers. comm.). It is astonishing that Gorjanović-Kramberger (1906) in his publications and monograph on the Krapina human assemblage did not mention cutmarks. Only in 1926 he mentioned "linear cutmarks" on the parietal bones (Gorjanović-Kramberger 1926).

Cutmarks on fossil human remains have usually been interpreted as evidence of cannibalism. This is clearly a misinterpretation. Cutmarks only point to ritual **defleshing of the corpse** and, in our opinion, to cleaning bones and bone fragments appropriated from the dead for celebrating mortuary practices. Cutmarks cannot tell us, if the removed flesh had been eaten by Paleolithic humans or not. Therefore cutmarks cannot be considered solely an evidence of cannibalism.

## Defect patterns in the area of muscle attachment and in articular surfaces

Very similar and mostly corresponding defects in the sites of muscle attachment and in articular surfaces of almost all postcranial remains of the Krapina bone sample cannot be interpreted, in our opinion, as coincidental or caused by weathering and other natural processes. They are the result of a forcible breaking of the joints (disarticulation, exarticulation) caused by humans, indicating a **dismemberment of corpses** of favoured deceased. Dismemberment patterns were first described by the author for the Krapina collection (Ullrich 1978). They appear in all joints, not only in the bigger ones (elbow joint: humerus – *Figure 3*, ulna, radius; shoulder joint: scapula, clavicula; hip joint: coxa, femur; knee joint: patella; ankle:



FIGURE 2. Paterns of skeletal part representation for the Neanderthals from Krapina compared with two prehistoric unburied samples from Oberdorla and Ralswiek (Germany) (data from Ullrich 1978, 2003 and unpublished).



FIGURE 3. Patterns of bone fragmentation and exarticulation marks in the distal part of the humerus from Krapina.

tibia, fibula, talus), but also in the smaller joints (vertebra, costa, metatarsal, metacarpal, finger and toe joints). In some cases it was possible to reconstruct the technique used to break the joints. Dismemberment patterns are visible on skull fragments, too: in the area of the *processus mastoideus, condylus occipitalis, ramus mandibulae* (*capitulum, processus muscularis*, gonion angle).

The results obtained from the Krapina material strengthen the suggestion that it was necessary for the living Krapina Neanderthals to dismember completely the corpses of their favoured dead. A complete dismemberment of corpses cannot be interpreted as evidence of cannibalism but only as evidence of special mortuary practices.

#### Bone breakage and breakage patterns

The fact that nearly all Krapina cranial and postcranial remains are in a fragmentary condition (only mandible J, 10 vertebrae, 2 claviculae, 3 patellae, 6 metatarsalia and most of the finger and toe bones are completely preserved) has been explained by Trinkaus (1985) and Russell (1987a) as due to sedimentary pressure and/or rock-fall. The results of our investigations however show that bone breakage in Krapina was very probably mainly caused by humans in order to appropriate broken bones of the deceased for celebrating mortuary practices. The skeletal parts (e.g. humeri, radii, ulnae, claviculae, fibulae) have very often the same size and shape, which means that they have been

broken roughly at the same area, although these areas have not been the more fragile ones. There is clear evidence that bone breakage was practised when the bones were still fresh. We have evidence of such **perimortem bone breakage** e.g. in the

- fracture patterns (spiral fractures, open marrow channels) in the diaphyses of the humerus *Figure 3*, radius and ulna;
- proximal right adult femur fragment 257.31 with the impressed fracture on the neck between the missing trochanter minor and missing caput; roughly circular fracture lines and the impressed bone area are clearly visible (*Figure 4*);
- blowmark on the left occipital area above the *torus occipitalis* of the smashed juvenile cranium B (*Figure 5*).

Perimortem bone breakage in Krapina was mainly done outside the rock-shelter (most cranial and postcranial bone fragments do not fit together) at an unknown place, obviously the place where the favoured individual died.

There is evidence of intentional postmortem breakage, caused when the bones were dry and no longer fatty, in the Krapina sample, too. The blowmark on the left lateral part of the *torus supraorbitalis* of the frontal bone 26 + 37.9 is a good example. Also some larger cranial fragments show postmortem breakage.

Intentional perimortem bone breakage is a widespread and frequent mortuary practice in the European Lower,



FIGRURE 4. Impressed fracture on the neck of the proximal right adult femur fragment 257.31 from Krapina (photo H. Ullrich).

Middle and Upper Paleolithic. Broken bones were obviously of great importance to Paleolithic humans in celebrating mortuary rites.

### Selection of bones and bone fragments

The different representation and the absence of some skeletal elements and bone segments in the Krapina human remains point to a purposeful selection. Only selected disarticulated bones and bone fragments of the deceased were brought intentionally by the Neanderthal inhabitants from the outside place of bone breakage into the rock-shelter. This is clearly demonstrated by the humeri (18 distal, 3 diaphyseal fragments; no proximal fragment), radii (12 proximal fragments; no distal and diaphyseal fragment), ulnae (12 proximal, 6 diaphyseal fragments; no distal fragment), femora (24 diaphyseal, 4 proximal and 3 distal fragments), tibiae (14 diaphyseal, 1 proximal, 2 distal fragments) and fibulae (17 diaphyseal and 2 distal/diaphyseal fragments; no proximal fragment) with the dominance of certain parts where others are completely missing. Normally one postcranial skeletal element is represented only by one and not by several fragments. Some skeletal elements are overrepresented in the Krapina assemblage, others are nearly or completely absent (e.g. nasal bones, sphenoid, sternum, carpale, metacarpale, sacrum).



FIGURE 5. Perimortem blowmark on the left occipital area above the *torus occipitalis* of the fractured juvenile cranium B. External and internal view (note the splitted off interna area) (photos H. Ullrich).

Intentional selection of bones and bone fragments is also a widespread practice in connection with mortuary rites in the European Paleolithic.

#### Archaeological and anatomical context

All human bones were found scattered on the floor of the rock-shelter, many of them in piles near the walls or fireplaces and in a small cavity (levels 3 and 4, more than 200 human bones), and mixed with animal bones. No anatomical connections of human bones have been reported by Gorjanović-Kramberger (1906a). These facts point to a mortuary ceremony where the human bones had been thrown away in the rock-shelter after finishing the ceremony. There is no archaeological and anatomical evidence that in Krapina entire intact corpses of about 40 dead had been buried in the rock-shelter which would have been much to small for such a large group of people. Cemeteries are unknown from the Middle Paleolithic (only in La Ferrassie 4 individuals were buried in grave-pits) and there are known only very few burials of the entire intact corpse of Neanderthals in Europe: La Chapelle, La Ferrassie, Régourdou, La Quina 5 and Roc de Marsal in France, Kiik-Koba, Mezmajsk and Staroselje in Ukraine.

## Evidence of cannibalistic rites within mortuary practices at Krapina

There is evidence of cannibalistic rites in the mortuary practices at Krapina on human bones:



FIGURE 6. Splitted tibia diaphyseal fragment 217 from Krapina with many cutmarks.

- percussion marks on split tibia fragments are indicating marrow extraction;
- perimortem bone breakage leading to opened marrow channels in humerus, radius, ulna and femur also point to marrow extraction;
- breakage patterns and blow marks on skull fragments indicate perimortem skull fracturing, obviously in order to remove the brain.

### Diaphyseal splitting

Gorjanović-Kramberger (1906b) recognised that some diaphyses of human long bones had been splitted longitudinally. Many diaphyseal fragments of the tibia and femur are the result of the longitudinal splitting. On the outer surface of the splitted tibia diaphyseal fragment 217 many cutmarks are visible (*Figure 6*). Diaphyseal splitting is also recognisable on the radius 189 (nearly half of the diaphyse is splitted) and 197 and on the ulna 181.

Contrary to the statement by Russell (1987a: 377) that "no evidence of hammer blows associated with marrow extraction has ever been found on Krapina specimens," percussion marks on most of the split tibia and on some



FIGURE 7. Percussion mark at a split tibia fragment from Krapina (photo H. Ullrich).

femur fragments do exist! These percussion marks, visible on the margin of the fragments, are defects larger on the inner surface of the compacta than on the outer one (*Figure 7*). Such a type of percussion mark is known from many Lower to Upper Paleolithic animal bones, especially diaphyses of long bones, indicating that the diaphyses had been split by a wedge using a hammerstone in order to remove the marrow or to use split fragments for manufacturing bone tools.

In Krapina the intentional splitting of tibia (and femur) diaphyses was obviously done inside the rock-shelter, because some of the split fragments could be fitted together (*Figure 8*). The split compacta fragments, usually very long, do not show any traces of wearing or use as bone tools. Therefore it is reasonable to conclude that diaphyseal splitting was done in order to extract the marrow.

## Opened marrow channels in long bones

Many of the long bones were broken perimortem in such a manner that the marrow channel was opened, very often on both sides of the diaphysis. This is the case with the most of the humeri (see *Figure 3*), radii, ulnae, femora, fibulae and claviculae. This is, in our opinion, clear evidence for marrow extraction, particularly as most of the opened marrow channels are located on adult bones with a high proportion of marrow.

#### Perimotem skull fracturing

The blow mark on the left occipital area above the *torus occipitalis* of the juvenile cranium B is one example of perimortem skull fracturing in order to remove the brain (see *Figure 5*).

We only have evidence that some diaphyseal splittings were carried out inside the rock-shelter at Krapina. We have no evidence that the perimortem bone breakage on long bones and skulls in order to remove marrow respectively brain were practised inside the rock-shelter.

## Krapina – evidence of mortuary practices, cannibalism, but also of care of injured people and killing

The results of our investigations on the Krapina human bone assemblage and on mortuary rites in the European



FIGURE 8. Some tibia split fragments could be fitted together (photo H. Ullrich).

Paleolithic strengthen the hypothesis of mortuary practices with cannibalistic rites in Krapina. There is no evidence that the entire intact corpses of the Krapina Neanderthals were buried by natural or human processes soon after death. They cannot represent the oldest sample of human burials yet known as suggested by Trinkaus (1985).

In Krapina there is evidence that manipulations on corpses of favoured deceased were carried out obviously in order to obtain bones from the dead for celebrating mortuary practices (ritual defleshing, dismemberment, perimortem bone fragmentation). There is no evidence that these manipulations on corpses were carried out inside the rock-shelter. Mainly intentionally selected broken bones and parts of bones were usually brought into the rock-shelter for celebrating mortuary ceremonies. After completing and finishing the celebration for the deceased within the Neanderthal group inside the Krapina rockshelter the broken bones were simply thrown away and got mixed with animal bones.

In Krapina there is also evidence of cannibalism, of cannibalistic rites celebrated in connection and within mortuary practices. But there is no evidence to consider the Krapina sample solely as remains of ritual cannibalism. Cutmarks indicating defleshing are much more numerous on the skeletal remains than necessary for removing the flesh in order to eat. They very probably point to cleaning of bones – a manipulation which cannot be understood in terms of cannibalism. The total dismemberment of corpses and the intentional bone breakage are also manipulations which cannot be associated with cannibalism.

Gorjanović-Kramberger (1906a) stated that human skull fragments were often burnt and that skull burning should point to cannibalism. In fact only 6.8% of the skull fragments and 0.5% of the postcranial remains show evidence of burning. Because some skull fragments show a black inner table it is reasonable to conclude that these fragments were burnt after perimortem breakage of the skull and got accidentally into or near the fire. Burnt bones are no criterion for cannibalism.

The Neanderthal remains from Krapina give evidence not only of mortuary practices and cannibalism but also of care of injured people and killing. On the adult parietal bones 34.7 and of skull D are located injuries which have to be interpreted as impressed fractures caused by blows with a blunt object during lifetime. Although such heavy cranial traumas would usually have lead to death they show according to Mann (1988: 347) reactions of healing



FIGURE 9. Impressed fracture on the right parietal bone of skull D from Krapina. External and internal view (photos H. Ullrich).

suggesting "that the individual had to be cared for until normal behavioural functioning returned." This suggestion has been confirmed for the parietal 34.7 after detailed inspection by the author. The external and internal margin of the defect are completely rounded, the diploe is nearly closed thus indicating that the individual had survived the heavy cranial trauma for a longer period. The healing reactions in the impressed fracture on the parietal bone of skull D are by far not so distinct: the external margin is sharp, the internal is broken out very broad; its margin is sharp, angular and edged; the diploe might partly be closed indicating a possible short survival (*Figure 9*).

Besides the evidence that the Neanderthals from Krapina took care of injured people, some cranial remains (e.g. frontal bone 4; parietal bones 3, 33.3, 34.3, 34.8) show cranial traumas of similar shape and size as can be recognized on both above mentioned parietal bones, but without any signs of healing, suggesting that these individuals died immediately after the injuries and had obviously been killed intentionally.

# CANNIBALISM IN THE EUROPEAN PALEOLITHIC

Cannibalism in the European Paleolithic has been described for several sites, based usually on the existence of cutmarks. But cutmarks are primarily not a criterion for cannibalistic rites but only for the defleshing of corpses in connection with mortuary practices. For most Paleolithic sites it is very difficult to decide whether cannibalistic rites were carried out or whether the human remains are the result of mortuary practices only. In our opinion a probability of cannibalism might be recognized only for sites with human bone fragments from several individuals. For sites with bones only from one or two individuals it is usually impossible to make a decision on cannibalistic rites.

There is no evidence for food cannibalism, but only for ritual cannibalism in Paleolithic times. Ritual cannibalism, in our opinion, was practised only within and closely connected with mortuary practices. Cannibalism was neither a widespread and common practice nor a custom in the Paleolithic. It cannot be considered a universal attribute to Paleolithic humans. But cannibalism, although practised rarely and only at few localities, was a fact in Paleolithic times (Ullrich 1989, 2004).

There is evidence of cannibalistic rites within mortuary practices not only in Krapina, but very likely also at some other Paleolithic sites:

Lower Paleolithic:	Atapuerca in Spain (Fernández-
	Jalvo et al. 1996, 1999;
	Fernández-Jalvo, Andrews 2001);
	Bilzingsleben in Germany (Ullrich
	1994)
Middle Paleolithic:	Vindija in Croatia (unpublished
	data by the author and by T. White
	- see also Gibbons 1997); Moula-
	Guercy in France (Defleur et al.
	1993, 1999); Weimar-Ehringsdorf
	in Germany (unpublished data of
	the author)
Upper Paleolithic:	Mladeč in the Czech Republic
	(unpublished data of the author)

For other Paleolithic sites cannibalistic rites were under discussion but have been denied – e.g. Monte Circeo I in Italy (Giacobini 1990/91, Toth, White 1990/91, White, Toth 1991) and Steinheim in Germany (Orschiedt 1996).

We have to accept the phenomenon of cannibalistic rites within mortuary practices in the European Paleolithic and to look for explanations of this practice that does not correspond with our modern ethic, aesthetic and humanist conception and understanding of the human being. Maybe that Paleolithic humans in their ritual thinking believed to appropriate the physical and mental power and abilities of the deceased members of their group when cannibalising them. By all criteria cannibalism gives evidence of an unmastered conception and explanation of human life and death and their contradictions in the daily life of Paleolithic humans. A new consideration of ethnographic parallels of cannibalism by Sanday (1986) suggests that cannibalism also in Paleolithic times might have been closely linked to people's orientation in the world, with the origins and continuity of life from one generation to the next and with the reproduction of society.

## CANNIBALISTIC RITES FROM THE NEOLITHIC TO THE MIDDLE AGES

Cannibalistic rites in prehistoric Europe have been under discussion for decades. Some anthropologists and archaeologists believe in prehistoric cannibalism, others deny it strictly and call it a fiction, a myth (e.g. Peter-Röcher 1994, 1998). It is, indeed, very difficult to distinguish between elements of cannibalism, cult, sacrifice and burial in the human bones and archaeological context of such prehistoric sites, where the dead had not been buried in graves and cemeteries. Besides there is no conformity about the criteria of cannibalism on prehistoric human bones. In our opinion neither cutmarks (very often described as signs of cannibalism) and bone breakage nor most of the other artificial bone modifications caused by humans can be interpreted as referring to prehistoric cannibalism. Only intentional perimortem bone breakage leading to opened marrow channels in long limb bones in connection with percussion marks resulting from splitting diaphyses and breakage patterns and blow marks indicating intentional skull fracturing might point on human remains to ritual cannibalism, because these activities were probably connected with marrow and brain extraction.

One of the earliest publications on cannibalistic rites respectively anthropophagy in prehistoric times has been published by Matiegka (1896).

From the Neolithic period Villa *et al.* (1986a, b) have studied the treatment of animal and human remains from Fontbrégoua cave in France and concluded from the striking similarities in marrow fracturing that cannibalism is the only satisfactory explanation. Other Neolithic sites with cannibalistic rites have been described from Perrats in France by Gauthier *et al.* (1993) and Zauschwitz in Germany by Grimm (1990, 1991).

Cannibalistic rites of the Bronze and Hallstatt Age in Moravia are documented in several papers of Jelínek (1954, 1957, 1988a, b, 1990a, b, 1994). He has carefully studied the human remains (skeletons, parts of skeletons and amounts of isolated bones) from Cézavy near Blučina and recognized on the isolated bones many cutmarks, dismemberment patterns and bone breakage patterns as well as evidence of cannibalistic rites: perimortem bone breakage with opened marrow channels in long bones, perimortem skull fracturing and splitted diaphyses. Jelínek could first demonstrate that in the Late Bronze Age and Hallstatt Age anthropophagy was connected with human sacrifice and that this rite existed at least one thousand years in Moravia. But "anthropophagy was more of an accompanying phenomenon" to human sacrifice, Jelínek (1990a: 126) concluded. Besides Cézavy near Blučina there are other sites in the Czech Republic with cannibalistic rites in the Bronze and Iron Ages, e.g. Velim near Kolín (Dočkalová 1988, 1990) with the same diagnostic features like Cézavy. Bronze Age sites have been also reported from Slovakia (Ambros 1971).

The Germanic Oberdorla in Thuringia (Germany) is a cult and human sacrificial bog site with isolated broken bones of 34–43 individuals dated from about 600 BC to 600 AD (most of them are from the Early Roman Period) with cutmarks, dismemberment and bone fracture patterns. Some individuals had intentionally been killed. 71% of the limb bones (mainly femur and humerus) show opened

marrow channels and the skull fragments perimortem skull fracturing – signs of cannibalistic rites. At the sacred places only cleaned and broken bones had been deposited. At Oberdorla we can notice a continuity of the human sacrificial cult with cannibalistic elements over a period of about one thousand years (Ullrich 2003).

Another human sacrificial site with cannibalistic rites in Germany is Ralswiek (Baltic Sea) with human bones from the 9th–13th centuries. All the numerous bones are broken and scattered on the sacrificial place and on the place with boats. Diaphyseal splitting, opened marrow channels and perimortem skull fractures have been diagnosed (unpublished data of the author). The most likely interpretation for Ralswiek is a human sacrificial cult with cannibalistic elements.

From numerous prehistoric sites in Europe there are also known isolated bones, mostly from one or few individuals, with artificial manipulations (cutmarks, defect patterns in articular surfaces, breakage patterns, splitted diaphyses, perimortem bone and skull fracture etc.). These bones have been found scattered in settlements, in houses, in pits, in wells etc. Although many of them show cannibalistic criteria, a differential diagnosis is very difficult with respect to cannibalistic rites.

## CONCLUSIONS

The question of the existence or non-existence of cannibalistic rites in the Paleolithic and in subsequent prehistoric periods can be answered only by a very detailed analysis of the human bones in connection with their archaeological context. Cutmarks cannot be a criterion of cannibalism but only of defleshing, because they cannot tell us whether the removed flesh had been eaten by Paleolithic humans. In our opinion only perimortem bone fracturing and splitting of diaphyses of long bones leading to opened marrow channels (marrow extraction) as well as perimortem skull fracturing (brain extraction) are the most useful criteria on human bones for cannibalistic rites. The same technique in dismembering animal and human corpses as well as in marrow fracturing of animal and human bones may also be a criterion for cannibalism. Unfortunately there are not yet available reliable data for cooking and roasting bone with meat/flesh.

There is no evidence of food cannibalism neither in the Paleolithic nor later in prehistoric periods. Cannibalistic rites in the Paleolithic were celebrated ritually only within and closely connected with mortuary practices. In subsequent prehistoric periods cannibalistic rites were connected with human sacrifice. Cannibalism was not a widespread and common practice and cannot be considered a universal attribute to Paleolithic and prehistoric humans. But cannibalistic rites, although practised rarely and only at few localities, were a fact with a long tradition in Paleolithic and prehistoric times.

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