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## PŘEDMOSTÍ – AN ALTERNATIVE MODEL INTERPRETING BURIAL RITES

**ABSTRACT:** *The Gravettian site at Předmostí in Moravia represents a unique Upper Palaeolithic mass burial. It is generally considered that entire intact corpses of 18 humans were commonly buried in one grave covered with 2 mammoth shoulder blades and a limestone layer. In a recent publication the position of the skeletons was reconstructed. We present an alternative model interpreting the burial rites in Předmostí based on the patterns of skeletal part representation of the human bones, the anatomical position of the bones, artificial bone modifications resulting from modifications on human corpses (defleshing, dismemberment) and on the evidence of biological relationship. The results of our investigations demonstrate that there is no evidence for burial of entire intact corpses of the dead. There is strong evidence that only **bones**, mainly in a disarticulated state, of a deceased, biologically related group were buried in the grave pit.*

**KEY WORDS:** *Upper Palaeolithic – Předmostí – Skeletal representation – Bone modifications – Burial rites – Bone burial site*

The Gravettian site at Předmostí, dated to 26,300 BP, represents a unique Upper Palaeolithic burial site. The remains of about 30 individuals (14 adults – males and females, 3 subadults and 13 children) are known. In 1894 the bones of some 18 individuals were excavated from a common grave pit obviously indicating a mass burial site. Unfortunately a detailed description or detailed documentation of this grave does not exist. Only rough outlines of 6 isolated areas of concentration of human bones (*Figure 1*) and notes from the excavation diary made by the excavator K. J. Maška are known, published by Absolon and Klíma (1977). The results of the anthropological investigation were published in two monographs by Matiegka (1934, 1938). Unfortunately all skeletal material from Předmostí was destroyed during World War II 1945 in Mikulov (only one mandible and some postcranial fragments are preserved in the Anthropos Institute in Brno).

In a recent publication Klíma (1991) has made an attempt to reconstruct the position of the skeletons and the burial rites for the mass grave based on the available data given by Maška. Klíma concluded that entire intact corpses of the dead were buried together and in his *Figure 2* he marked the probable position of the 18 deceased in the elliptical grave pit measuring 4 × 2.5 m (*Figure 2*). Some of the dead should have had a stretched position lying on the back, others a crouched one, most of them with the head to the north. The grave was covered by an up to 40 cm thick layer of limestone blocks separating it from the cultural layer above. In Klíma's opinion the limestone cover in the southern part of the grave had not sufficiently protected the corpses so that carnivores, especially foxes, had the possibility to destroy the corpses and to drag parts of them off. The incompleteness of the skeletons was also associated to carnivore activities.

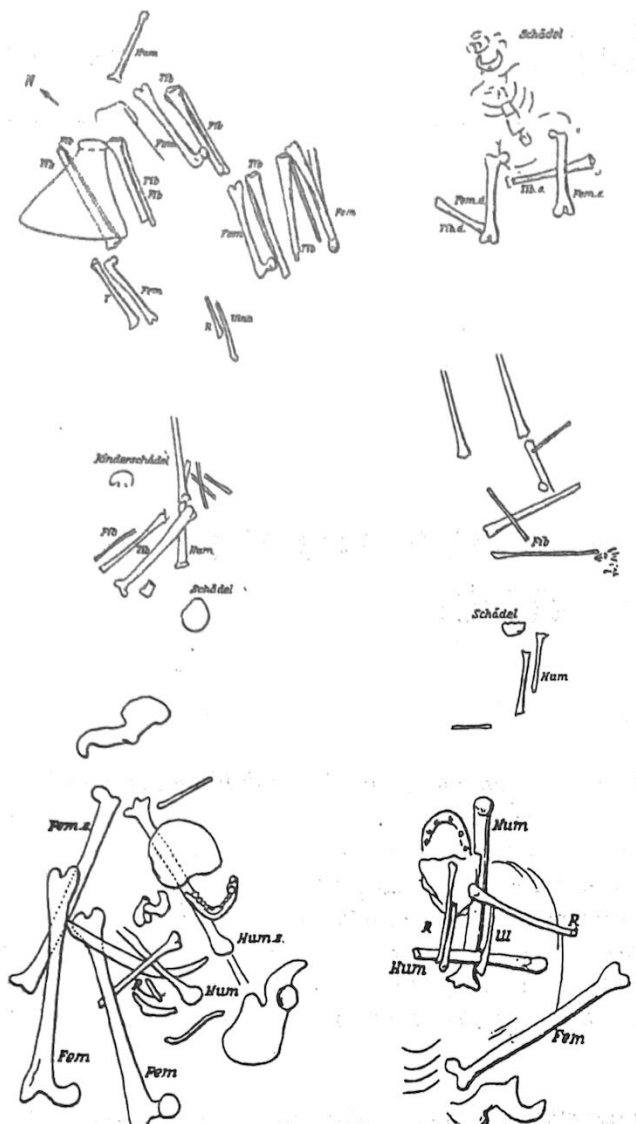


FIGURE 1. Předmostí. Sketches of 6 human bone concentrations by Maška (Absolon, Klíma 1977).

We would like to present an alternative model interpreting the burial rites for the mass grave from Předmostí based on the representation of the skeletal parts of the dead, their anatomical position, artificial bone modifications and on the results obtained for the general mortuary practices and burial rites during the Palaeolithic in Europe (Ullrich, in prep.).

**PATTERNS OF SKELETAL PART REPRESENTATION**

The representation of the skeletal parts of the Předmostí individuals is based on data published by Matiegka (1934, 1938) and Vlček (1971). Only 5 skeletons are almost complete; none of the skeletons is complete. All the other individuals are represented by a few *skeletal parts* or *disarticulated bones* only. The following pattern of skeletal part representation is given:

- Skeletons**  
 PŘ. III (male, 35-40 years): almost complete skeleton *largely in anatomical position*.  
 Missing parts – 3 thoracic vertebrae, most ribs, sternum, all carpals, 1 metacarpal, 7 phalanges from the hands, 1 patella, 1 tarsal, 1 metatarsal, 15 phalanges from the feet.  
 PŘ. IV (female, 35-40 years): almost complete skeleton, *no anatomical position*.  
 Missing parts – 2 thoracic vertebrae, 1 lumbal vertebra, most/all ribs, sternum, all carpals, 6 metacarpals, 19 phalanges from the hands, 1 patella, all tarsals, 26 phalanges from the feet.  
 PŘ. IX (male, 20-25 years): almost complete skeleton, *no obvious anatomical position*.  
 Missing parts – 1 cervical vertebra, 4 thoracic vertebrae, 1 lumbal vertebra, most ribs, sternum, all carpals, 4 metacarpals, 20 phalanges from the hands, 2 patellas, 2 metatarsals, most phalanges from the feet.  
 PŘ. X (female, 20-25 years): almost complete skeleton, *no anatomical position*.  
 Missing parts – 7 thoracic vertebrae, 2 lumbal vertebrae, most ribs, sternum, all carpals, 10 metacarpals, 17 phalanges from the hands, 2 patellas, 4 tarsals, all phalanges from the feet.  
 PŘ. XIV (male, 40-50 years): almost complete skeleton, *no anatomical position*.  
 Missing parts – 1 thoracic vertebra, most/all ribs, sternum, all carpals, 5 metacarpals, 17 phalanges from the hands, 1 patella, 4 tarsals, 5 metatarsals, 23 phalanges from the feet.

**Skull remains**

- PŘ. XVI (infant): left parietal, occipital, teeth.  
 PŘ. XVIII (male, 20 years): frontal bone, mandible, skull fragments.

**Mandibles**

- PŘ. XII (infant, 0.5 year): right mandible, teeth.  
 PŘ. XIII (infant, 0.2 year): mandible, teeth.  
 PŘ. XV (infant): left mandible.  
 PŘ. XVII (infant): ascending ramus of the mandible, teeth.

**Skull and postcranial remains (mostly disarticulated) – no anatomical position evident.**

- PŘ. I (male, 20-25 years): cranium, 2 humeri, 2 radii, ulna, 2 metacarpals, 6 phalanges from the hands, 2 femurs, 2 tibiae, 2 fibulae.  
 PŘ. II (infant, ca. 7 years): calvaria, maxillary bones, mandible, 2 femurs, 2 tibiae.  
 PŘ. V (male, 15-16 years): calvaria, zygomatic and maxillary bones, mandible, 2 humeri, radius, 2 ulnae, metacarpal, 7 phalanges from the hands, 2 femurs, 2 fibulae.  
 PŘ. VI (infant, 2-3 years): calvaria, mandible, 2 radii.  
 PŘ. VII (juvenile, 12-14 years): calvaria, maxillary bones, mandible, clavicle, 2 humeri, 2 radii, ulna, 2 femurs, 2 tibiae.

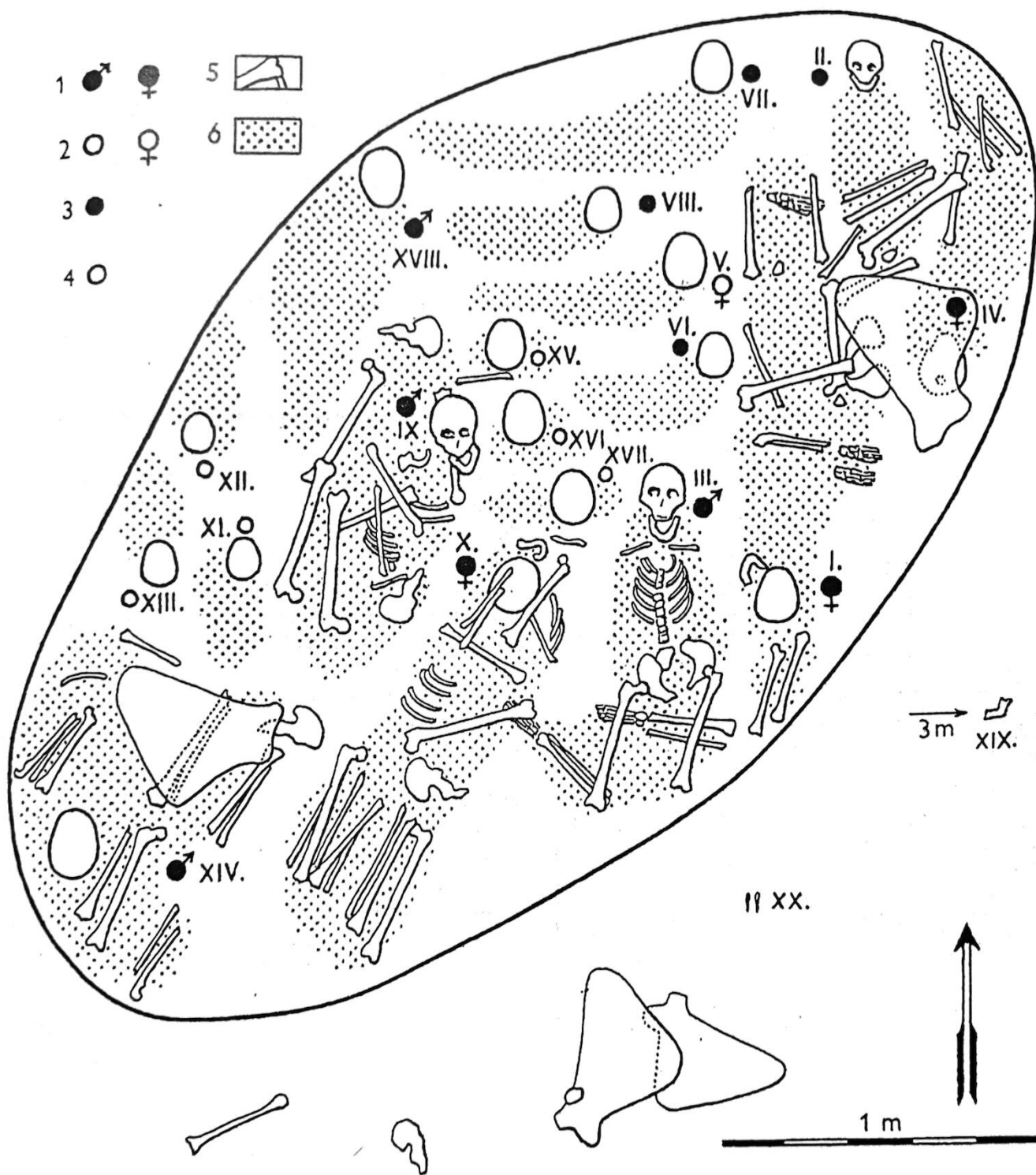


FIGURE 2. Předmostí. Reconstruction of the mass burial using data given by Maška (Klíma 1991).

Př. VIII (infant, 3-4 years): frontal, occipital and temporal bones, maxillary bones, mandible, 2 humeri, radius, 2 ulnae, coxa, 2 femurs, tibia.  
 Př. XI (infant, 0.5 year): skull fragments, mandible, teeth, femur, long bone fragments.

The patterns of skeletal part representation clearly demonstrate that there is no evidence that primarily entire intact corpses of all the dead were placed into the grave. This is only possible for Př. III, IV, IX, X and XIV which

are represented by almost complete skeletons. All the other 13 individuals are represented either by skull remains (1 male and 1 infant) respectively, mandibles (4 children) or skull and mostly disarticulated postcranial remains (2 males, 4 infants and 1 juvenile). Archaeologists often argue that such patterns of disarticulated skeletal parts are the result of disturbances of a primarily complete skeleton (and therefore a buried entire intact corpse of the dead) by natural processes such as weathering and chemical

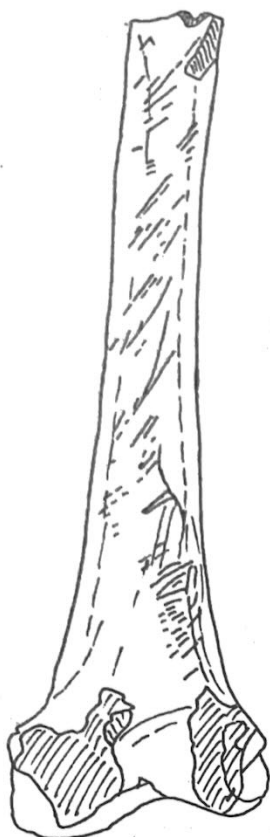


FIGURE 3. Přebudovice. Left femur of Př. XXVII with multiple cutmarks and scraping marks (drawn after Absolon 1929: 81).

processes and/or postdepositional disturbance by carnivores etc. We have analysed the skeletal representation for 826 individuals from 320 Palaeolithic sites in Europe (Ullrich 1992, 1995, in prep.) and have found that all known Lower Palaeolithic, 93.9 % of the Middle Palaeolithic and 84.1 % of the Upper Palaeolithic individuals are represented by disarticulated (and very often broken) bones, in general only 1-2 bones. We have clearly demonstrated that these patterns of disarticulated skeletal part representation are not the result of postdepositional or natural disturbances of a primarily complete skeleton at the site where bones were found, but have to be interpreted as the result of intentional human activity in connection with mortuary practices. It is most reasonable to conclude that in these cases only disarticulated **bones** of the dead were brought intentionally to the cave, rock shelter or open site and deposited or buried there. Disarticulated human bones at Palaeolithic sites in most cases therefore reflect predepositional human activity and human selection both of the deceased and of the bones.

At Přebudovice human remains were found not only in the mass grave, but also in the cultural layer at the open site: mandibles (Př. XIX, XXI, XXIV, XXV, XXVI and XXX – 4 adults, 2 infants), skull and postcranial remains (Př. XX, XXII and XXIII – 1 adult, 2 infants) or postcranial remains only (Př. XXVII, XXVIII and XXIX – 3 adults).

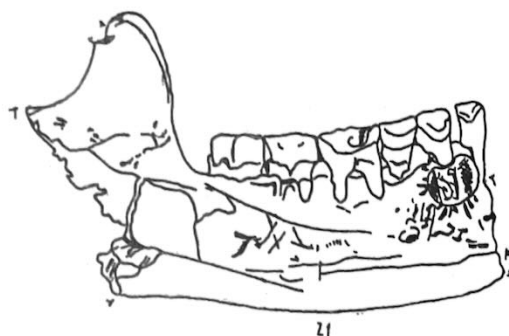


FIGURE 4. Přebudovice. Mandible Př. XXI (drawn after Matiegka 1934).

### ANATOMICAL POSITION OF BONES

A very important aspect in interpreting human bone assemblages is the anatomical position of bones indicating that complete/almost complete skeletons or skeletal parts had been *in situ*. Unfortunately the sketches and notes in the diary of Maška give very little evidence of bones in their anatomical position. Only for the incomplete skeleton Př. III such a position is evident: most of the bones (skull?, vertebrae, ribs, clavicles, pelvis, femurs and right tibia) are in a natural, anatomical connection. In another sketch of bone accumulation assigned to Př. I an ulna and some metacarpals and phalanges from the hands are anatomically connected. In his notes Maška only mentioned an isolated complete foot and a fibula in the central area of the grave pit and a tibia and fibula laid parallel to each other. This is the only evidence of anatomical positions of bones in the mass grave!

Maška's sketches and notes in the excavation diary confirm the conclusion that most of the bones in the mass grave were not in an anatomical connection, but disarticulated, isolated and disordered. The sketches as well as the notes also confirm that long bones were often arranged in bundles, parallel to each other and close together. This also points to the fact that these bones were intentionally placed as isolated **bones** into the grave.

### ARTIFICIAL BONE MODIFICATIONS – MANIPULATIONS ON HUMAN CORPSES

Absolon (1929) published most of the bones of an adult skeleton (Př. XXVII) which were found not far from the mass grave near a fireplace within the cultural layer. The bones (2 teeth, scapula, 2 ulnae, right radius, 2 left carpals, 9 right and left metacarpals, 8 phalanges from both hands, left coxa, 2 femurs, 2 tibiae, 2 fibulae, right patella, 10 right and left tarsals, 6 right and left metatarsals, 2 phalanges from the right foot) were clustered together and in no anatomical connection. Unfortunately only the ventral view of the broken left femur has been figured. This figure clearly shows 26 mostly parallel, oblique



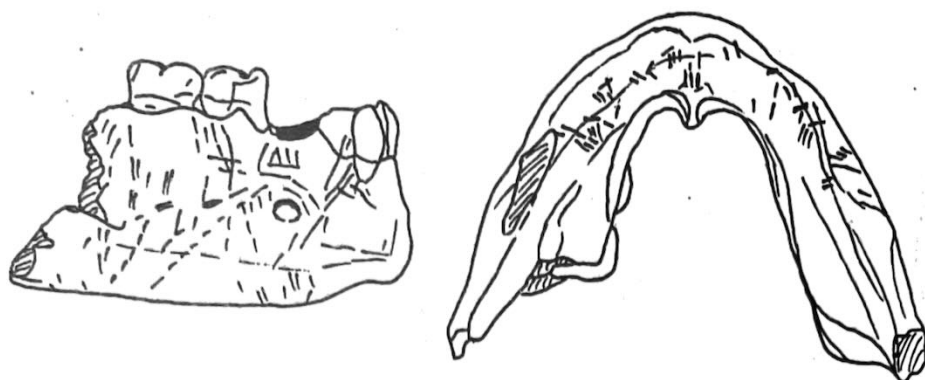


FIGURE 5. Předmostí. Mandible Př. XXX with broken off ascending rami and cutmarks.

cutmarks running medio-laterally and many scraping marks (Figure 3) indicating defleshing. The distal articular area exhibits large medial and lateral damages very similar to disarticulation patterns observed on many human bones from other Palaeolithic sites. Absolon also mentioned that some human bones had been split longitudinally. From all this evidence we can conclude that modifications on the corpse of Předmostí XXVII (defleshing, dismemberment of the corpse, cleaning and splitting long bones) were carried out and that only the above mentioned bones were deposited intentionally, but without any recognizable ritual, in connection with mortuary practices at the place where they were discovered.

There is also evidence of forcible fragmentation of mandibles from outside the mass grave. The figure of Př. XXI (Matiegka 1934: 87 – see Figure 4) depicts the broken off rear margin of the right ascending ramus including the articular process, a long fracture line running forward from this fracture and also damages on the top of the coronoid process (obviously resulting from disarticulation of the mandible). Skutil (1940: Fig. 32) published a photo of the mandible Př. XXVI where the right ascending ramus has been completely fractured off.

We have studied the only preserved mandible from Předmostí in the Anthropos Institute in Brno. This mandible from an adult individual (25-30 years) cannot be identified as one of the mandibles described in the literature. Therefore we named it Př. XXX. Both ascending rami have been forcibly broken off (breakage patterns) and on the outer/inner surface and basal margin of the body, although heavily weathered, some short parallel cutmarks are clearly visible (Figure 5) pointing to defleshing and fragmentation of the mandible.

#### Evidence of artificial bone modifications from the mass burial

The photos published by Matiegka (1934, 1938) and casts of the skulls are, unfortunately, the only objects available for analysis of artificial bone modifications on the human bones from the mass grave. There are damages in the area

of the mastoid process (Př. I, II, III, IV, VII and X), on the occipital condyles of the skull (Př. I, II, III, V, VI, VII), on the coronoid process (Př. I, III, V) as well as in the gonion area of the mandible (Př. I) which are very similar to decapitation patterns (mastoid process) and disarticulation patterns of the mandible observed in many other Palaeolithic human remains (Ullrich 1978, 1982, 1986, in prep.). There are also large damages in the skull base of Př. I, III and X, but it cannot be concluded whether these are due to intentional damage or are of natural postmortem origin. Although most of the postcranial bones depicted in the figures are complete, some of them have damages obviously not connected with natural destructions but similar to disarticulations patterns of postcranial remains known from other sites, e.g. clavicle Př. VII (sternal and acromial ends are damaged), scapula Př. IV, IX, X, XIV (acromion process, scapular spine, coracoid process, glenoid cavity are damaged), humerus Př. V, VII, X (head, head/anatomical neck are missing, medial epicondyle and capitulum are damaged), radius Př. III, V, VII, IX (proximal/distal ends are missing/damaged, circumferential area is damaged), ulna Př. VII, IX (proximal/distal ends are damaged), coxa Př. IV (acetabular fossa is damaged) and tibia Př. III, IV (proximal articular area is damaged) – see Matiegka (1934, 1938). These damages might point to the dismemberment of corpses.

A careful inspection of the figures of the skull and postcranial remains also reveals many dark linear, often parallel, mostly short structures on the surface of many bones, which might be cutmarks and scraping marks. We have also found similar scratches on the cast of Př. IV skull. A definite decision would only be possible on the original bones, but unfortunately they are lost.

The skull Př. XIV shows some flat, mostly nearly circular depressions on both parietal bones: a large one (25 mm long, consists of two overlapping depressions) parasagittal and a smaller one behind the coronal suture on the right parietal bone and four depressions (6-9 mm in diameter) parasagittal on the left parietal bone. All the depressions have a scarred surface showing signs of healing. Although Matiegka (1934: 125) excluded a

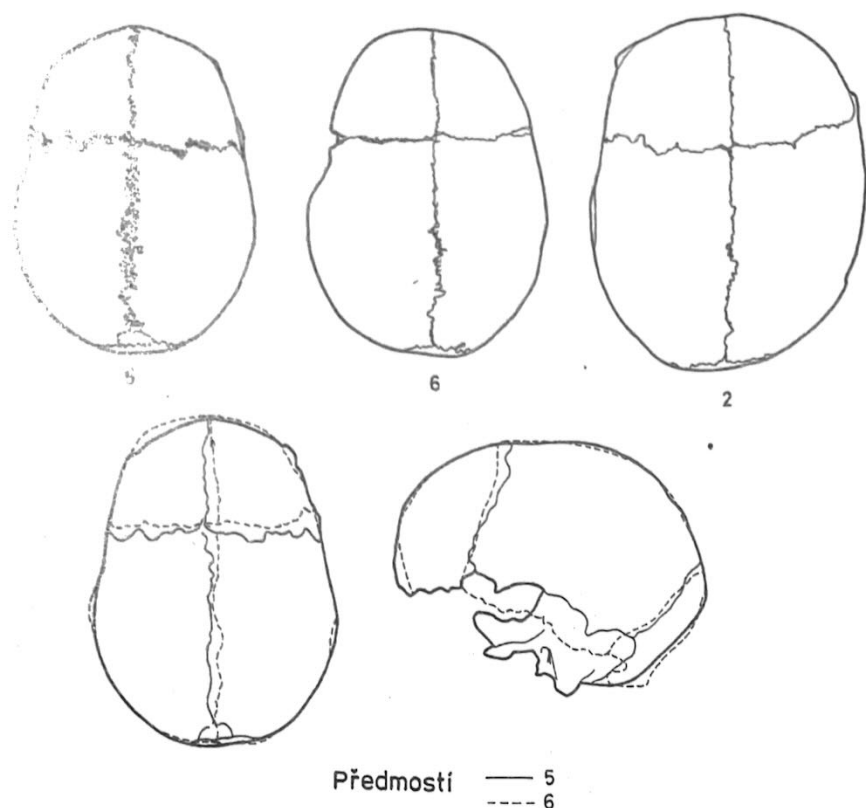


FIGURE 6. Předmostí. Frontal suture in Př. II, V and VI. Superprojection of the superior and lateral aspects of the skulls Př. V and Př. VI.

traumatic origin of the depressions, we do not believe in a pathological one. The depressions are arranged systematically and on the left parietal bone in a linear fashion so that they can be explained in our opinion only as minor depression fractures produced deliberately during some rites.

### EVIDENCE OF CLOSE BIOLOGICAL RELATIONSHIP

Maška (1894) was the first to suppose that the individuals buried in the mass grave might represent a *diluvial family* who died together during a catastrophe. The question of the close biological relationship of the Předmostí individuals has often been touched upon later by archaeologists (see also Klíma 1991) but could not be answered by anthropologists. Although there is still no generally applicable method for the reconstruction of the genetic kinship of prehistoric populations, the results of many investigations have clearly shown that for several individuals in some cases it is possible to obtain direct indications of family or closer related ties from the skull (e.g. from the general form and shape, epigenetic traits) or from postcranial bones, even for Palaeolithic individuals (Vlček 1995, Ullrich 1996, Alt 1996). For the methodological background for reconstructing close biological relationship see Ullrich (1996).

Because of the loss of the original skeletal material from Předmostí it is impossible to search for indications

pointing to a close biological relationship on the bones and only the published data and photos (Matiegka 1934, 1938) can be used.

Only 10 skulls can be examined for evidence of close biological relationships. Most remarkable is the existence of the metopic suture in 3 infantile/juvenile skulls (27.3 % – Př. II, V and VI). Př. V (15-16 years) and Př. VI (2-3 years) also have a very similar profile in the lateral and superior aspect (Figure 6). The skulls Př. IX (male, 25-30 years) and Př. X (female, 20-25 years) show a high degree of similarity in the frontal, lateral, superior and posterior aspects (Figures 7 and 8) and in many morphological traits (e.g. in the dentition, cross-section of the ribs), obviously demonstrating close biological relationship. This might also be assumed between other individuals from the mass burial, e.g. between Př. I (male, 20-25 years) and Př. IX/Př. X (Figure 8) as well as from the reconstructed profiles of the face for example between Př. IV (female, 30-35 years) and Př. XI/Př. X (Figure 9).

In addition in his publication Matiegka (1934) mentioned the absence of the parietal foramen in two groups of individuals: 1st group (males Př. III and Př. IX; female Př. V and child Př. IV) – both foramina are missing; these individuals also have a right turning of the occipital sulcus as shown in Př. I; 2nd group (male Př. XIV, female Př. X and children Př. II and Př. VII) – the left parietal foramen is missing.

These few criteria point to the conclusion that a burial of a *biologically closely related group* is a very probable explanation for the mass grave from Předmostí.

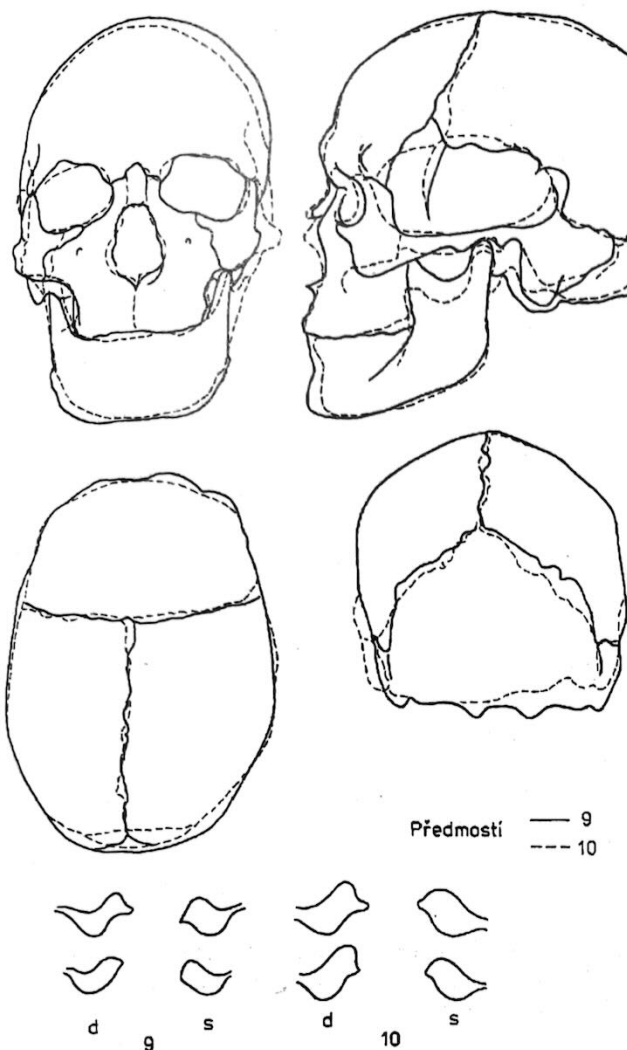


FIGURE 7. Předmostí. Superprojection of the frontal, lateral, superior and posterior aspects of the skulls Pře IX and X. Cross-sections of the ribs from Pře IX and X.

### AN ALTERNATIVE MODEL OF BURIAL RITES

In our opinion there is no evidence that entire intact corpses of the dead (5 males, 2 females, 2 juveniles, 9 infants) were ever buried in the grave pit at Předmostí and covered with two mammoth shoulder blades and a layer of limestone blocks:

1. Most of the individuals are represented by either one or a few disarticulated bones only.
2. There is no evidence to suggest that entire intact corpses or complete skeletons of the 13 individuals were placed into the grave pit and that after the closure of the grave pit 99 % of the bones were disturbed by natural processes or by carnivores (foxes etc.). None of the excavated human bones showed signs of animal gnawing.
3. Although five skeletons are almost complete only the bones of one individual were largely in anatomical position. The bones of the other four individuals were found close together, but not in anatomical connection.

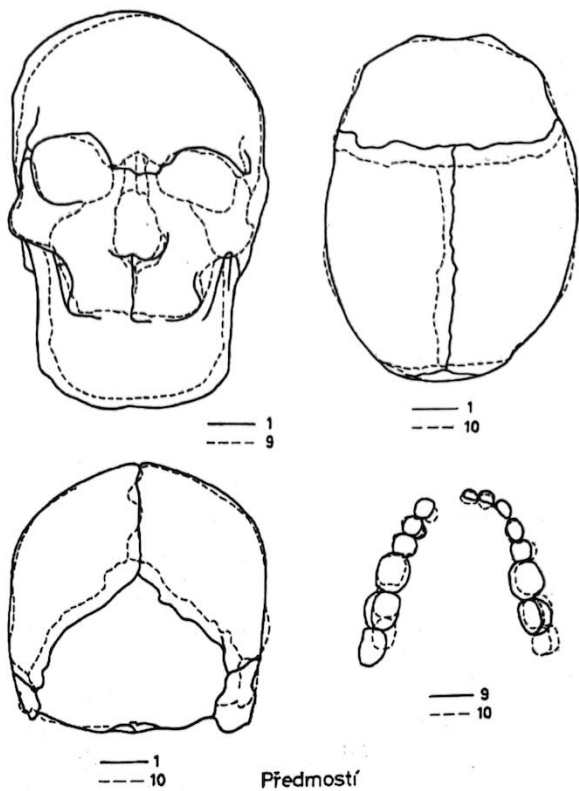


FIGURE 8. Předmostí. Superprojection of the frontal, superior and posterior aspects of the skulls Pře I, IX and X.

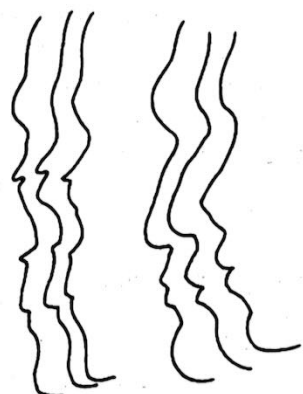


FIGURE 9. Předmostí. Lateral profiles of the skulls Pře IX, X and IV and reconstructed facial profiles (drawn after Gerasimov 1964).

4. There is evidence of artificial modifications on some disarticulated bones of most of the individuals in the mass burial as well as on human bones found outside the burial pointing to modifications on the corpses of the deceased celebrated in connection with mortuary rites.

The patterns of skeletal representation, the anatomical position of the bones and the artificial bone modifications clearly give evidence that in the grave pit from Předmostí only **bones** of the dead and not intact skeletons were **deposited**, and that these consisted mainly of **disarticulated bones** resulting from modifications on human corpses: skull remains of one infant and male,

mandibles only of 4 infants (it is noteworthy to mention that another 6 individuals outside the mass burial are also represented by mandibles only) and skull and postcranial remains of one male, 2 juveniles and 4 infants. Also only **disarticulated bones** were deposited in the grave pit of the 4 adult individuals Př. IV, IX, X and XIV, even though these are represented by **almost complete skeletons**. There is no evidence of an anatomical connection of the bones and some of them show artificial defects. Only in the case of the male Př. III, represented by an almost complete skeleton parts of the skeleton were in anatomical position (the bones connected by ligaments and tendons) when the **skeleton** was put into the pit.

If we consider that the interpretation of a **simultaneous mass burial** by Maška and Klíma is correct, where the human remains were put simultaneously one after another into the pit and covered by two mammoth shoulder blades and a layer of limestone blocks, then Předmostí has to be interpreted as a **bone burial site**, where the **bones of a deceased, biologically closely related group** were buried. This bone burial site might be a **primary burial site** or a **secondary burial site**. Unfortunately we do not know when the corpses of the deceased were modified. We only know that the corpses were modified (defleshing, dismemberment) and that bones of the dead were very important for mortuary practices in Palaeolithic times. After mortuary ceremonies were completed the bones of the dead were very often simply thrown away, deposited or buried.

In Předmostí Upper Palaeolithic hunters obviously buried the bones of their dead in the common grave pit before leaving the camp site for the next season or forever. The bones of each individual were put close together, long bones often parallel to each other, and obviously separated from bones of other individuals. It is noticeable that most of the bones of the adult skeletons were deposited, whereas this applied to only very few or few bones from each of the children. There is no evidence that one or all individuals from the mass grave died of an unnatural death. The left coxa of a juvenile with a large perforation published by Klíma (1991: Fig. 3) has not been attributed to the bone material from the mass grave (see Vlček 1971).

Contrary to the widespread opinion of archaeologists that entire intact corpses of the dead were obviously commonly buried in the mass grave at Předmostí, our alternative model interpreting burial rites in Předmostí is based on the patterns of skeletal part representation, on the absence of anatomical positions of the bones and on the existence of artificial bone modifications pointing to modifications on human corpses (defleshing, dismemberment). According to this alternative model it is evident that **only bones of the dead** were buried in the mass grave at Předmostí.

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