

# Women's Work?

## Findings from the Neolithic Chert Mines in the 'Krumlovský les', South Moravia

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**Abstract:** Krumlovský les revealed one of the largest mining fields in Europe dated from the Mesolithic to the Hallstatt period. Quarrying culminated in the Early Bronze Age, when the local Jurassic chert, re-deposited in the Miocene sands, was extracted from hundreds of shafts up to 8m deep, with most of the production material left at the site. The largest shafts of the Late Lengyel culture were located on a slope below a re-deposited boulder. Shaft no. 4 yielded two skeletons of females; the lower one had a newborn placed on her breasts. Both women were found to be the shortest of the then population as a whole, and they were weak, diseased, and poorly fed during their childhood. By contrast, as adults they were fed with meat and carried out heavy work, which is corroborated by strongly marked muscle attachments and vertebral degeneration. The hypothesis is that the patriarchy extracted labor (also) from lower status individuals who toiled in the mines. However ritual aspects cannot be excluded: in some lands, the Earth is of female gender, and as such will more willingly accept women than men... but why exactly the smallest ones?

Keywords: Krumlovský les, Southern Moravia, Lengyel Culture (LGK), chert quarrying, burials

### Chert mining in Krumlovský les

The vast forested area of 'Krumlovský les' (the Krumlov Forest) in South Moravia is known for its prehistoric mining, as it is rich in the outcrops of Jurassic chert that is re-deposited in Miocene sands (Fig. 1). The quality of the local stone was only mediocre, but in spite of that it was the reason for an intensive settlement of this area from the Middle Palaeolithic. The oldest documented mining activity in this region dates to the Mesolithic. In the Bell Beaker period quarrying continued to increase in importance; local production radically increased and exports diminished. This is yet more clearly expressed in the Early Bronze Age (the Únětice Culture), when mining ceased. There were hundreds of shafts in this area, filled and surrounded with thousands of tons of chipped industrial waste, indicating that nearly all the production remained in place. It is quite obvious that since this period, at the latest, this old extraction landscape was not important because of its lithic resources, but because of its past. Extraction at this site lasted until the Hallstatt period. Narrow and deep shafts (up to 8m in depth) were mostly excavated through the backfill of ancient shafts without reaching an intact seam. Sometimes hoards of lithic materials, mostly older in origin than the shafts, are found at their bottoms (Oliva 2010: 378, 381 ff).

### Shafts of the Middle Neolithic

Mining in the Late Lengyel period (c. 4200 cal BC) is the most interesting topic of this contribution. The most significant Late Lengyel dated features were discovered in trench VI-9. This cuts into the rather steep slope

below a chert-breccia boulder in the eastern part of the zone VI. The meter-high boulder lies on re-located loam containing many flakes, and so it was no doubt placed there by human hands. Certainly the most important shaft is no. 4. It is located c. 8m below the megalith previously mentioned. In this shaft, a late Lengyel pedestalled bowl was registered at a depth of 2m. Strikingly, it was found in a single piece, oriented vertically in a 'functional' position (Fig. 2). The concentration of charcoal in the immediate area of the upper part of the bowl supplied a radiocarbon date (GrN-27500) of 5490±60 years before present (44350±70 cal BC 68%). It is interesting that besides this bowl, there were no other shards. Approximately 15cm below the pedestalled bowl lay a large flat stone. From a depth of 5m we removed only the sandy filling of the prehistoric shaft with very sparse evidence of chipped stone industry, without major concentrations. The backfill was separated from the intact Miocene sand by a white lime crust. At a depth of 510–520cm near the north edge of the shaft was registered a complete skeleton of a hare in anatomical order. The circular cross-section of the shaft, 100–120cm wide, continued down to a depth of 6m, where it formed a bell-like enlargement, at the level where small chert pebbles began to appear in the extracted sand. The size of the pebbles did not exceed 10cm. The northern undercutting reached some 40cm further than the southern one (15–20cm).

The first human skeleton emerged in the initial widening at a depth of 6 meters and belonged to a young woman, who originally lay in a horizontal, tightly flexed position, on her back. Quite possibly she was subsequently placed on her right side facing the

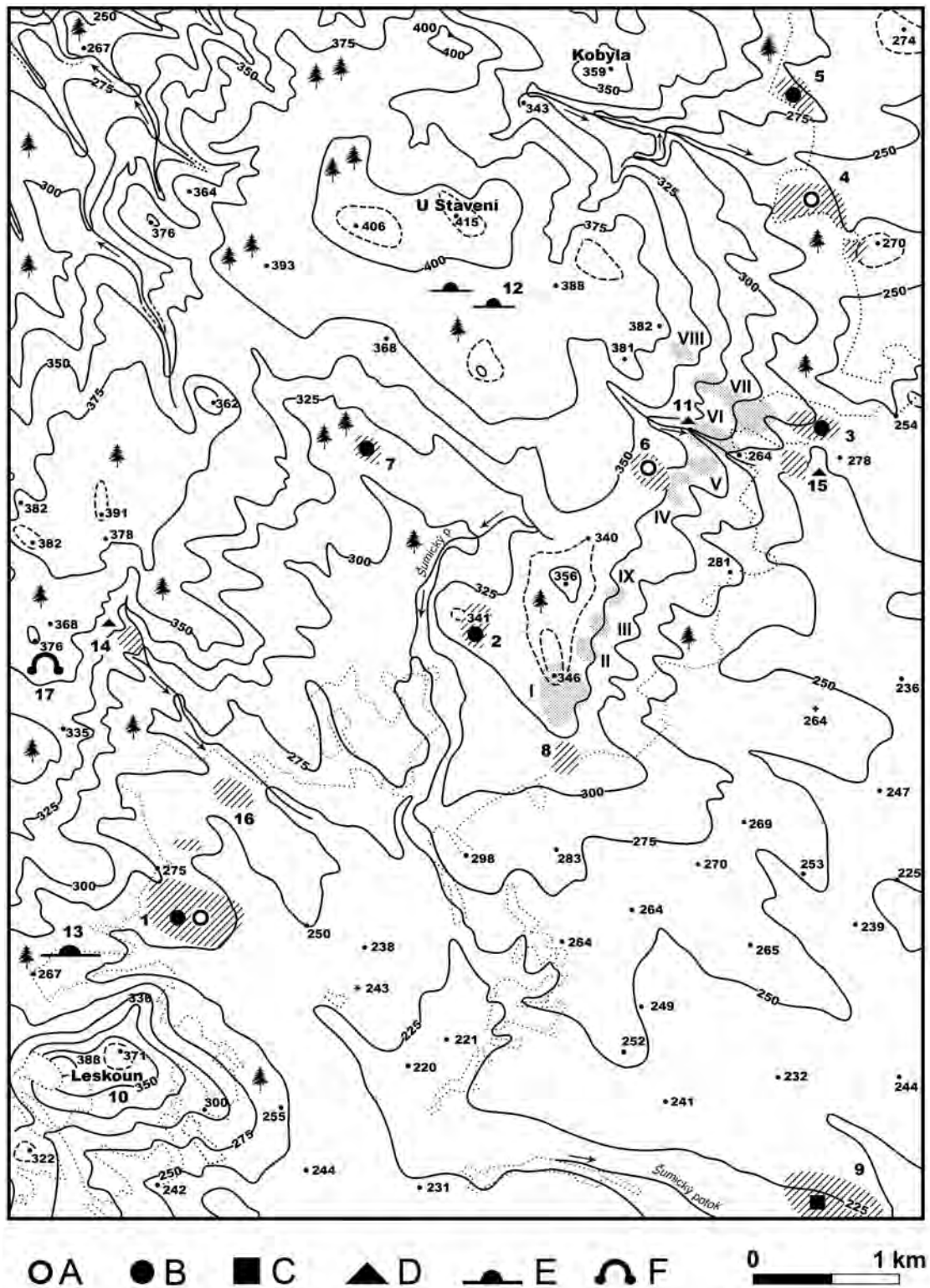


Fig. 1. Prehistoric settlements and extraction areas (I–IX) in Krumlov forest. A–LBK, B–Lengyel culture, C–Early Bronze Age, D–Hallstatt Age, E–burial mounds, F–hoard of bars. 1–Vedrovce, Znojmo district [(settlement and burial site LBK, 2 rondels Moravian Painted Pottery culture (MMK)], 2–Moravský Krumlov – Vysoká hora, Znojmo district, 3–Jezeřany–Maršovice – Na Kocourkách, Znojmo district, 4–Nové Bránice – V Končinách, Brno district, 5–Nové Bránice B, Brno district, 6–Moravský Krumlov – traces of a MMK settlement over area V, Znojmo district, 7–Moravský Krumlov – Dlouhá louka, Znojmo district, 8–Moravský Krumlov – polycultural settlement near area I, Znojmo district, 9–Kubšice – Nad Lukama, Znojmo district, 10–Olbramovice – fortification Leskoun, Znojmo district, 11–Moravský Krumlov – Horákov settlement in mining area VI, Znojmo district, 12–Hallstatt mounds near Stavení (not visible today), 13–Urnfield mound below the Leskoun hillfort, 14–Late Hallstatt hillfort in Mokřý žleb, 15–settlement Maršovice – Jalovčiny, 16–Hallstatt site at Vedrovce, Znojmo district, 17–hoard of bronze bars of the Únětice Culture below the rocky outcrop. The dotted line indicates the forest edge. Drawn: T. Janků.



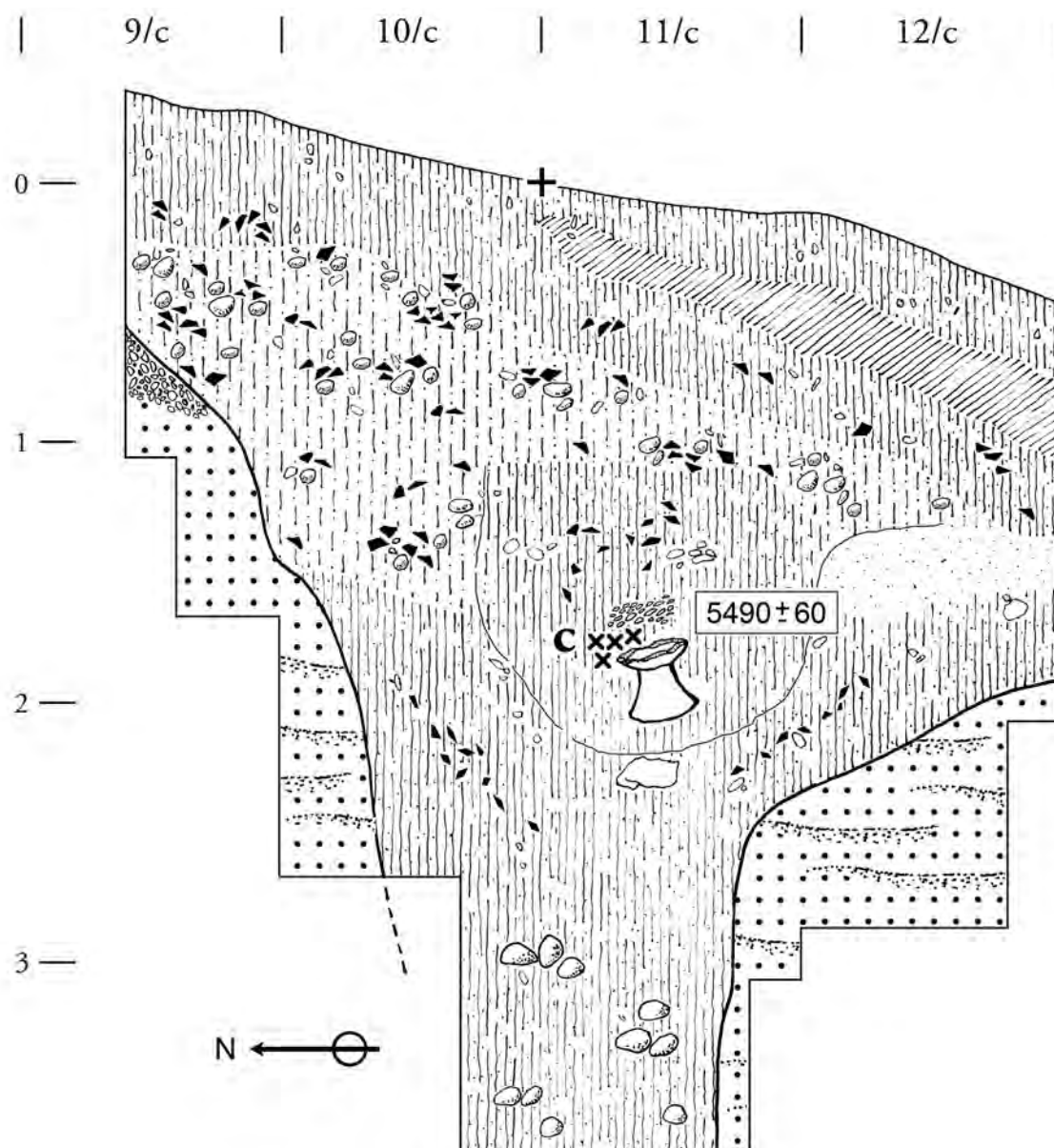


Fig. 2. Upper part of Late Lengyel Shaft 4, indicating the position of the pedestal bowl. Drawn: T. Jankú.

wall of the pit. The skeleton suffered displacement of the thorax, disarticulation of the knees, and movement of one scapula (Fig. 3). We can attribute all of these phenomena to the pressure of sediment. But the pressure of sediment cannot explain the position of the cranium: the cranium faced the opposite direction to what one would expect. It was facing towards the center of the shaft and slightly downward. The shoulder joint was found c. 50cm from the remainder of the skeleton, with the elbow extended posteriorly behind, from the vertebral column. This unusual disposition suggests that the body may have been placed into the pit in pieces, and makes probable the assumption that the woman was, indeed, sacrificed. Radiometric analysis of human bone provided the following date: GrA-22839: 5380±50 BP (4210±90 cal BC 68%). Near the disarticulated upper

limb we found two chert hammerstones. Immediately adjacent to the skeleton lay four cores, a blade flake and a smaller flake. Another skeleton was found nearly 1m deeper than the preceding skeleton. This one lay anatomically undisturbed, but it was placed in a highly unusual position. The body of this young woman was laid on her back, which was arched to accommodate the shape of the northern enlargement (Fig. 4). Her hands were clasped behind her head and she faced slightly to the left. The open jaws were evidently related to the post-mortem decay of the associated soft tissues. At the left breast of the woman was the head of a newborn, his or her legs were found in the pelvic region. An incomplete skeleton of a small dog was found some 30cm above the cranium of this woman (Fig. 5). The post-cranial skeleton undoubtedly belonged to the



Fig. 3. The upper skeleton in Trench VI-9-1, Shaft 4 (LGK). Photo: M. Oliva.



Fig. 4. The lower two skeletons, those of a woman and an infant, in Trench VI-9-1, Shaft 4 (LGK). Drawn: T. Janků.

cranium and mandible of the dog that lay at the same level in the western extension somewhat more to the south. Two small slender bones, evidently from the hind limb of a green frog, were found over the clasped hands of the female body. Near the skeleton lay three precores (one of them weighed 1.6kg), three flakes, and a hammerstone. Removal of the fill of the undercutting was stopped about 20cm below the lower skeleton, and we removed sand from the center of the shaft only.



Fig. 5. The upper thorax of the lower skeleton, a woman with a newborn child on her breast. Above the cranium is a partial dog skeleton. Photo: M. Oliva.

From the lowest part of the shaft at a depth of 700–750cm, came 39 artefacts, of which 22 are waste, seven flakes, and six unworked raw material pieces. On the bottom itself lay the jaw of a pig. The slightly concave bottom of the pit was encountered at a depth of 740–750cm. It consisted of calcified detritic sediment of a rusty brown colour that was much hardened. Drilling down 60cm more the floor was of the same nature. This sediment was undoubtedly too hard for the tools of prehistoric miners to penetrate, which may be why the shaft was not deepened further – but the sediment above consisted of fine, light sand mixed with chert pebbles that was easily dug away. However, the undercutting expanded only to a distance of 35cm from the perpendicular wall. Layers were visible in the rusty sand in the profile of the lower 2m of the filling; the backfill rose upward and abutted the northern wall, where the two skeletons were located. These strata indicate that the shaft was intentionally filled in, as the extracted sand fell mostly along the southern wall – it was simply easier to throw the fill down the slope.

These finds represent the first time that a shaft in which human remains in unusual burial positions was discovered in Central Europe. Prior to this, other extraction shafts have only yielded either individual skeletons, or regular burials with grave goods (as, for instance, at Mauer, near Vienna; Ruttkay 1970).

#### Physical condition of the buried women

The upper female died at the age of 30–35, the lower one was aged 35–40. Both females were gracile with distinct muscle topography. Their statures were estimated at 148 and 146cm, respectively, which means that both females were the shortest of all individuals examined from the Moravian Lengyel Culture period. The mean body height of other LGK-females is 155.54cm (Dočkalová and Čižmář 2008: 73; Tvrđý 2010: 408). Both women have delivered, as indicated by the strong development



Fig. 6. The lower female skeleton, ulnae with distinct muscle attachments. Left ulna with unhealed fracture.  
Photo: Z. Tvrđý.

of the *sulcus preauricularis* on both hip bones. Enamel hypoplasia on the incisors and Harris lines on the tibiae (Dočkalová and Čižmář 2008: 56 and Fig. 49; Tvrđý 2010: 406, 408) show evidence of stress experienced by both individuals during their growth and development. The health condition of the lower woman was poorer than that of the upper one. She suffered from iron deficiency, evident from the porotic hyperostosis on the occipital part of cranium, and her left ulna had been broken and healed with pseudoarthrosis (Tvrđý 2010: 406). Both skeletons show evidence of hard physical activity, i.e. distinct muscle topography (Fig. 6), Schmorl's nodes on lumbar vertebrae, and osteophytes (Tvrđý 2010). Such phenomena were not uncommon in the then population (Dočkalová and Čižmář 2008: 72–74), however their common occurrence on one skeleton is quite exceptional.

The skeletal remains were analysed for carbon, nitrogen and strontium isotopic composition ( $^{13}\text{C}/^{12}\text{C}$ ,  $^{15}\text{N}/^{14}\text{N}$  and  $^{87}\text{Sr}/^{86}\text{Sr}$  ratios) to determine their origin, diet, and living environment. The women were well-fed during the last year of their lives according to the carbon and nitrogen isotopic analyses. They had eaten animal proteins, as well as plant food, including berries rich in minerals and vitamins. The meat eaten originated mostly from sheep/goats and pigs (Nývltová-Fišáková 2010). The micro-abrasion analyses of tooth crowns also support these results (Jarošová 2010). Strontium isotopic ratios of the analysed remains of these women are within the range of the local Neolithic population, known mainly from the Vedrovice Linearbandkeramik Culture (LBK) cemetery. This means that the females could have spent all their lives in the surroundings of the Krumlovský les.

Cross-sections of the mandibular first molar roots were used to ascertain the season of death of both women found in shaft 4 of the prehistoric mining area of the Krumlovský les. According to analyses of dental cement microstructures they both died in spring. This fact suggests that they both died either at the same time

or in the same season, within one year or over several years (Nývltová-Fišáková 2010).

The results of the DNA analysis (Šerý 2010) demonstrate that the skeletal remains of both females are related, and may represent a mother and a daughter, or two sisters. The skeletal remains of the child differ in five alleles from both of the female skeletons, a fact which absolutely rules out the possibility of any affinity between the child and the females.

## Discussion

The unusual physical characteristics of the females buried in shaft 4 suggest that individuals of small stature and poor health were (probably) subjected to strenuous work in these mine shafts and suffered poor nutrition in their youth. The extremely small and gracile stature of the women, hypoplastic dental defects and anaemia testify to this. In contrast, they also possess well-developed muscle attachments and degenerative conditions of the vertebrae: The women were no doubt provided with a substantial meat diet in adulthood in order to withstand the exhausting manual labor.

We must admit we have no clear explanation for these facts. From the viewpoint of division of labour it is certainly paradoxical that the hardest work in the mines would be carried out by the shortest and the least healthy. It is generally assumed – at least according to traditional views – that the physical role of men in the late Neolithic was favored, as a consequence of the need of male strength to perform newly emerging work requirements, such as ploughing and mining (Neustupný 1967). From a purely ergonomic point of view, the small stature in the miners would be advantageous, since they would more easily fit into the narrow shafts. But it is important to remember that in the Krumlovský les the shafts are wider than those at Abensberg-Arnshofen, where it is assumed that mining was done by children (Rind 2014). Another reason that women performed such labor may be based on religious beliefs – in Africa, for instance in Katakana and Zambia, women allegedly worked in the mines because they are more easily accepted by the Earth, since it is likewise of female gender (Kandert 2010: 107). The third explanation invokes simple human ruthlessness: the hardest work is not carried out by the strongest, but by those who can be coerced into it most easily. Naturally, we can lighten this somewhat brutal statement by some kind of explanation of a socio-ritual nature. The women, although perhaps of local origin, might have been destined to such toil by some circumstance that remains unknown to us. Moreover, we cannot assume that these two women are representative of the whole population carrying out the mining. This is not



necessarily the case. However, it would still be striking that both individuals buried in the shaft were indeed the shortest adult members of the then population as we know it. The ununited broken fracture of the forearm found in the lower-most female (about parry fractures: Judd 2008) may have meant that she was unfit for work for a number of months, and this might have been the reason why she was eventually put to death.

By way of conclusion a few examples of similar attitudes to female labour have previously been found elsewhere. The study of muscle attachments in the adult population from the Iron Age cemetery in Hallstatt revealed that men showed traces of exertion typical for quarrying, while in women these were caused by the strain from hauling bags with salt into the valley (Pany 2005). Carrying commodities is often a task left to women, since such activities are not prestigious ones. In Africa a husband riding a donkey is often seen by the side of his wife, walking with vessels of water (as witnessed by visitors).

Quite possibly the growth of the prestigious role of men, which was typical for the Eneolithic (Neustupný ed. 2013), did not always arise from their ability to carry out the newly demanded heavy labour, such as ploughing, extraction, digging fortification moats, and mounding up of ramparts, but also from the possibility of being able to coerce someone into such work, thereby demonstrating male superiority. Some of these new activities were useful for the community (e.g. ploughing), while others more likely came into existence to increase the prestigious roles of individuals. This includes the exploitation of flint that made possible the manufacture and distribution of attractive tools and weapons. At the same time, such quarrying brought opportunities to manage extensive activities and to control the distribution of prestigious products. Without doubt, it mattered more who managed this activity than who performed it. It seems that the division of labour can be very ambiguous in these early societies.

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