

THE SIBIRYACHIKHA FACIES OF THE ALTAI MIDDLE PALEOLITHIC

M.B. Mednikova

*Institute of Archaeology, Russian Academy of Sciences,
Dm. Ulyanova 19, Moscow, 117036, Russia
E-mail: medma_pa@mail.ru*

**AN ARCHAIC HUMAN ULNA FROM CHAGYRSKAYA CAVE, ALTAI:
MORPHOLOGY AND TAXONOMY***

Excavations at the Chagyrskaya Cave site in Gorny Altai have revealed a Mousteroid industry along with fragmented human remains. This study focuses on a left ulna from stratum 6a. Its size, proportions, symptoms of disease, and indicators of muscular activity, point to Neanderthal affinities. The bone is large, linking the individual with certain Near Eastern Neanderthal males such as Shanidar. Symptoms of what might be diagnosed as Forestier disease suggest likewise.

Keywords: *Chagyrskaya Cave, ulna, archaic humans, Neanderthals.*

Introduction

In 2007, S.V. Markin of the Institute of Archaeology and Ethnography, Siberian Branch of the Russian Academy of Sciences (Novosibirsk), discovered a Mousteroid industry in Chagyrskaya Cave, Krasnoshchekovsky Region, Altai Territory. The site is located in the mid-alpine zone on the left bank of the Charysh River, 25 m above the water level (Derevianko, 2009: 34). The river flows across the northern slopes of the Tigirek Range (Derevianko, Markin, Zykina, 2009; Derevianko, Markin, 2012; Markin, Zykina, Zykina, 2011; Derevianko, Markin, 2011).

The cave consists of two halls totaling 130 sq. m in area (Derevianko, Markin, Zykina, 2008). The industry resembles that of Okladnikov Cave (previously referred to as Sibiryachikha), situated at a distance of 100 km from Chagyrskaya (Derevianko, Markin, 1992; Derevianko,

2009; Derevianko, Markin, Zykina, 2008). According to A.P. Derevianko (2009: 34; 2010; 2011), the resemblance is evidence of a distinct local Mousterian-like industry, named Sibiryachikha, rather than an isolated event that is hard-to-explain.

Human remains associated with this industry and first discovered as early as 1984 were examined by several researchers. The remains are few, fragmentary, and indistinct at first sight*. Their study falls into three stages.

At the first stage, dental remains were examined. The taxonomic attribution of five teeth (those of juveniles aged 12–14 and children aged 5–7) was a matter of controversy. C.G. Turner II claimed that they revealed affinities with Neanderthals, specifically those of Europe rather than the Near East (Turner, 1988, 1990). V.P. Alekseyev (1998) did not exclude the possibility that the teeth were those of early *Homo sapiens*. Results of a later detailed

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*B. Viola refrained from ascribing the fossils from Okladnikov Cave to a specific taxon (Viola et al., 2011: 208).

dental examination also seemed to identify the Middle Paleolithic hominins of the Altai as early *Homo sapiens* (Shpakova, 2001; Shpakova, Derevianko, 2000).

The second stage in the study of archaic human remains from the Altai was paleogenetic analysis, the results of which are widely distributed (Krause et al., 2007). Bone samples from four postcranial bones were analyzed at the Max Planck Institute of Evolutionary Anthropology in Leipzig: a middle phalanx and a distal humerus of adults, and fragments of juvenile humerus and femur. Mitochondrial DNA was extracted from three long bones. Parallel to that study a sample of bone tissue taken from the left femur of the Teshik-Tash child was analyzed. The results of the analyses suggested that children from both Okladnikov and Teshik-Tash caves were Neanderthals. The eastern boundary of the Neanderthal distribution range, previously believed to have passed across southwestern Central Asia (possibly across what is now Uzbekistan) was thereby shifted 2000 km further east, up to southern Siberia.

The third stage in the study of Middle Paleolithic remains from the Altai was marked by a renewed interest in morphological analysis, partly because of the introduction of new techniques, extracting more information from fragmented remains. The use of traditional measurements and descriptive techniques, however, was useful as well, as seen from the analysis of 12 postcranial bones from Okladnikov Cave (Mednikova, 2011). Although the sample was heterogeneous in terms of sex and age (some individuals were infants), several specimens shared a combination of archaic and unique characteristics. While the totality of postcranial morphological traits suggests that the Sibiryachikha humans were Neanderthals, certain archaic traits link them with *Homo erectus*. They were least similar to Near Eastern early anatomically modern humans of the Skhul and Qafzeh group and most similar to Near Eastern Neanderthals such as Tabun C1 and in part, Shanidar. Near Eastern Neanderthals therefore might have been the ancestors of those in the Altai. This conclusion supports the view expressed by archaeologists: only Near Eastern industries might have been ancestral to the early Middle Paleolithic industry of Gorny Altai (Derevianko, 2009: 35).

Why then do the Okladnikov Cave Neanderthals display plesiomorphic traits? Two explanations were suggested (Mednikova, 2011: 82–86). One is that these humans had originated from an early and undifferentiated Neanderthal population before most apomorphies marking European Neanderthals had developed. The second explanation is that on their way to eastern Central Asia, Near Eastern Neanderthals hybridized with one of the non-Neanderthal archaic human populations.

The second hypothesis is supported not only by numerous facts pointing to the late survival of *Homo erectus* in Asia (Anton, 2003), but also by the presence

of Denisova hominins in the Altai. Denisovans, judging from their genome, represented yet another archaic human lineage in Asia. Their physical type is unknown because their remains are quite scarce (Krause et al., 2010; Reich et al., 2010). Given the territorial proximity of Denisova, Okladnikov, and Chagyrskaya caves, it is possible that Neanderthals hybridized with Denisovans 50–40 ka BP. This is all the more likely because hybridization between Denisovans and anatomically modern humans in Asia has been reliably documented by genetic data (Reich, Green, Kircher et al., 2010; Reich, Patterson, Kircher et al., 2011).

Therefore any new human remains from the Altai are very important. The 2010–2011 excavations at Chagyrskaya Cave culminated in the discovery of human bones in strata 6b and 6c. They were associated with lithic artifacts and a large number of animal bones, and their age is so far estimated on the basis of stratigraphic facts: the lowermost horizon of the cave deposits correlates with the Tulinskoye loess (MIS 4), which accumulated during the Yermakovo stage*.

Fossils from stratum 6b include a small worn upper deciduous canine and an atlas fragment of a 3–5 year-old child (Viola et al., 2011), said to be of no diagnostic value. Those from the underlying stratum 6c are an upper P⁴ fragment and a heavily worn lower incisor with an extreme degree of hypercementosis. The teeth are very small, with short roots, and according to B. Viola, they fall outside the Neanderthal variation range. However, a detailed study of the deciduous canine conducted by A.P. Buzhilova using the microtomographic method revealed similarities with teeth of Neanderthal children from Le Figuer, Dederiyeh 1, Spy 4, and with those of a Middle Paleolithic child from Qafzeh 10 (Buzhilova, 2011).

The 2011 field season at Chagyrskaya yielded a large mandibular fragment with the right corpus and C–M₂ (Viola et al., 2012), found in stratum 6c and displaying Neanderthal apomorphies such as continuous midtrigonid crests of M₁ and M₂, strongly asymmetrical P₄, a posteriorly placed mental foramen, and an oblique mylohyoid line. According to B. Viola, this specimen provides the first morphological link between the hominins of the Altai and Western European Neanderthals (Ibid.).

Postcranial morphology of Chagyrskaya humans may be no less informative. This article presents the results of the study of an ulna discovered in Chagyrskaya Cave in 2011. Given the facts suggesting that at least two archaic hominin populations (Neanderthals and Denisovans) inhabited this area, the results may be relevant to disclosing the taxonomic affinities of this distinct group of archaic *Homo*.

*In a tentative publication these finds were dated to the Karga interstadial (MIS 3) (Viola et al., 2011).

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