

Historiographical review of comprehensive study of the Upper Paleolithic site Sungir on the Klyazma river and its dwellers (brief archaeological and paleoanthropological overview)

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Summary.

The first time when one of the northernmost Upper Paleolithic sites in the East European plain was presented to the readers was in 1959. Since that time there have been many archaeological and anthropological studies. The recent years have also seen some genetic research of this small Upper Paleolithic population. Moreover, there are many articles and even books about taxonomic position of the Sungir people, their adaptation to northern conditions, life support and cultural development. This article represents a complete review of literature with description of interpretations and opinions of various scholars. As a result, we make a conclusion that the Sungir people belonged to the *Homo sapiens* taxon, were well-adapted to northern conditions and had complex funeral rites (since the children buried in the double grave were most probably relatives).

Key words: East European plain, Sungir, stratigraphy, geological and absolute age, archaeological culture, burials, skeleton S1, craniology, osteology, Bader O.N., Bunak V.V., Debets G.F., Zubov A.A., Sulerzhitsky L.D.



Introduction

The wide archaeological audience was first acquainted with one of the northernmost Upper Paleolithic sites in the East European plain in 1959 (Bader, 1959), 3 years after its discovery and three excavation seasons. Then came O.N. Bader's article "Sungir, its Age and Place among Paleolithic Sites of Eastern Europe" (Bader, 1961).

The international scientific community got acquainted with materials from the site, which had already been acknowledged as a model for comprehensive studies of the Quaternary period, in 1961, at the International Congress of INQUA in Warsaw, with the joint report by

O.N. Bader, V.I. Gromov and V.N. Sukachev (Bader, Gromov, Sukachev, 1961). In 1963, participants of the International Symposium on Paleolithic Stratigraphy and Periodization examined excavation pits of Sungir and geological sections of its surroundings (Symposium resolution, 1965). O.N. Bader's article "Sungir and its Archaeological Profile" was published in the same year (Bader, 1965a).

In 1966, a monograph by three above-mentioned authors published in the Transactions of the Geological Institute of the Academy of Sciences of the USSR summarized the results of 10-year studies at the site (Bader, Gromov, Sukachev, 1966). It contained a casual reference to a very important fact: "Discovery of two burials at the site in 1964 raised its profile in studying of stratigraphy and periodization of the Upper Paleolithic age in Europe" (Upper Paleolithic site..., 1966. P.6) and "Discovery of two burials at the site is very interesting for scientists" (Ibid. P.116). More detailed information about the burials was given in O.N. Bader's articles "Upper Paleolithic Burials near Vladimir" and "Upper Paleolithic Burials and a Grave at the Sungir Site" (Bader, 1965b, 1967).

Quite detailed description of the burials discovered at the Sungir site may also be found in a multi-authored monograph dealing with paleoanthropological finds at Sungir (Sungir..., 1984) opening with O.N. Bader's article (Bader, 1984), which will be discussed below.

The main results of O.N. Bader's work with materials from the Sungir site were described in the monograph "Sungir. The Upper Paleolithic Site" summing up more than 20 years of studies (Bader, 1978). According to Bader, a book called "Sungir. Paleolithic Burials" published as the first part of the multi-authored monograph "The Paleolithic Settlement Sungir (Burials and Environment)" (1998) has been conceived as a wide panorama of primitive society based on comprehensive analysis of the whole set of sources. O.N. Bader's text was published after his death without any factual changes, but was accompanied with editorial comments and notes by N.O. Bader and Yu.A. Lavrushin.

O.N. Bader gives a detailed description of finds, stratigraphy, occupation layer of the burials, skeletons and grave goods. A considerable part of the work is dedicated to reconstructions: a reconstruction of clothes based on accurately recorded position of the vast number of beads on the skeleton bones and under them, a reconstruction of wooden tools and spears in the children's grave, reconstructions of various cults: funeral cult, cult of the dead, cult of celestial bodies, totemism and shamanism.

The last chapter is dealing with symbols, lunar calendar and counting in the Paleolithic age.

Though O.N. Bader himself comments that his main task was a formal statement of facts, his work is marked with the author's fascination with results of the discovery.

Nevertheless, O.N. Bader's publication is very good in reproducing his vision of the site and contains a lot of information about this unique, outstanding discovery in the Paleolithic archaeology – no doubt, the discovery of universal importance (The Paleolithic Settlement..., 1998).

Since that time, both methods and procedures for studying of geology, stratigraphy and age of the sites have undergone significant changes in the course of progressive advance of Paleolithic science, and therefore all the above-mentioned works are worthwhile for the history of science.

Thus, we will focus on the summary of scientists' conclusions regarding geological and absolute age of the site and the burials, their archaeological context, living environment of men, their economic and household structure, to some extent – their spiritual life.

Results of further excavations and studies performed during almost half a century are summed up in multi-authored monographs – the above-mentioned monograph published in 1998 and two monographs dealing with paleoanthropological finds at the site (Sungir, 1984, *Homo sungirensis*, 2000).

I. Geological and archaeological contexts

Location of the site, its geological and absolute age and archaeological profile. The site is located on the left bank of the ancient Klyazma, in its spit with the Sungir stream, at the height of 5-8 m above the water edge. Occupation layer of the site occurs in a clay loam mantle covering a Dnieper moraine, in the upper part of second-from-the-bottom buried soil. The problem of geological age of the site was dealt with in different ways – from Mikulino to Ostashkovo age (Bader, Gromov, Sukachev, 1961; Lazukov, 1965; Ivanova, 1965).

Today, there is a whole series of dates. Thus, the laboratory of the Geological Institute of the Academy of Sciences under the guidance of L.D. Sulerzhitsky has obtained 21 dates for the occupation layer based on collagens of mammoth, horse and reindeer bones (Lavrushin *et al.*, 2000). The basic array of dates, between 28800 ± 240 (GIN-90) and 26300 ± 300 (GIN-9034) covers the time of active life of the settlement. As for the vast area of the excavation pit (connected with quarrying) equal to 4500 sq. m, the rich occupation layer has been recorded over the area of 80×100 m over the whole mass of buried soil. The total thickness of the soil and occupation layer subject to intense and complex deformation is 1 m.

A detailed palynological study, in combination with thorough geological study of the occupation layer, allowed detecting there two members consisting of buried

soils intensely dislocated by slope processes (Lavrushin *et al.* 2000). Men lived at this site in various natural environments, which is testified by palynological studies and coordinated with the dates. First of all, there were fir forests with various degree of closeness; meadows were covered with miscellaneous herbs, while the Sungir valley was waterlogged. During formation of the second buried soil, the fir forests were replaced by pinaceous communities; open spaces were covered with meadow vegetation and bogs. In terms of faunistic remains, the site has the typical mammoth fauna that existed in landscape and climatic conditions of cold tundra steppe (Vereshchagin, Kuzmina, 1977, Alexeyeva, 1998). However, bones of brown bear, cave lion, marten, on the one hand, suggest the existence of forested areas, and on the other – confusion of faunistic finds from different layers (Alexeyeva, 2000).

Thus, L.D. Sulerzhitsky and his co-authors disputed a concept of one-layer nature of the site and formulated an idea of 2 occupation layers (Lavrushin *et al.*, 2000).

In the course of archaeological studies performed at Sungir, O.N. Bader found some clusters of occupation remains with hearth pits, dozens of bonfire sites and hearth pits outside these clusters, places of bone and flint processing and two graves with 5 burials in them (O.N. Bader, 1984. P.6). Flint tools from the site are made of boulder flint and characterized by the primitive technique of splitting and making of some archaic forms represented by a series of scrapers, tools close to manual points, many various chisel-shaped tools and individual discoid nuclei (O. Bader, 1984. P.6-13). A form specific for Sungir is a flint pike with concave base made with the use of flat retouching. Flint tools from the site are characterized by low percentage of knife-shaped blades as compared to flakes. Bone and horn tools demonstrate application of various processing techniques – lengthwise dissecting of tubular bones, cutting, circular carving, drilling. The well-developed appearance of bone tools is suggested by the presence of spikes and flat sculptures. O.N. Bader, the author of excavations, classified the site as belonging to the later age of the Kostenki-Sungir or Streletskaya-Sungir culture (O. Bader, 1984. P.8). The question of cultural affiliation of the site was also raised later, on the basis of new excavations and analysis of new finds (N.O. Bader, 1998; Grikhova, 19; Anikovich, 2004).

Living conditions and economic/household structure of the site dwellers. According to the authors of excavations, the site should be reconstructed as a seasonal hunting camp. Analysis of faunistic material from occupation layer of the site suggests that these were mainly food waste, which is testified by milled skulls and long bones. The main huntable species were: arctic fox, reindeer, horse, mammoth. Bones of arctic fox, wolf, brown bear, wolverine and marten are indicative of fur trapping (Alexeyeva, 2000).

Description of graves and reconstruction of funeral rites. A detailed description of two graves, grave goods and reconstruction of funeral rites may be found in several articles by O.N. Bader (Bader, 1965, 1967, 1984).

The graves were situated in the south-western, upper part of the site, about 3 m from each other. The Grave 1 contained a skeleton of an elderly man (S1). In the upper part of the grave, on an ocher spot, there was a skull without teeth and a lower jaw bone (S5) lying near a big stone. The Grave 2 contained a paired burial of two children buried antithetically head to head (S2 and S3). The same grave contained a human femur labeled as S4. Moreover, O.N. Bader describes S6, as remains of a completely destroyed burial above the Grave 2, in the form of bone traces (O.N. Bader, N.O. Bader, 2000. P.25). Remains labeled as S7 are represented by a femur fragment in a soil flow between the Graves 1 and 2. The authors of excavations assume that it was carried out by this flow, which passed through the upper burial of the Grave 2. According to preliminary estimate, these bones belonged to an adolescent female. S8 is a fragmented skeleton (skull and femur fragments) found in 1969, 200 m south-eastward from the settlement, at the depth of 4 m. It was studied by a forensic expert V.N. Zvyagin, who concluded that the bones belonged to a very young girl (*Homo sun-girensis*, 2000. P.61). S9 is a skeleton of an adult person found in a quarry during earthworks in 1972, 200 m south-eastward from the settlement, at the depth of 3 – 3.5 m, in the Bryansk buried soil, without any archaeological context. Sungir 7, Sungir 8 and Sungir 9 were not made available to anthropologists, were not studied and are now lost (Bader O.N., 1984, 1998). O.N. Bader thought that he found a burial ground, “a place for burial of kinsmen” (Bader, 2000).

The Grave 1 contained a skeleton of an elderly man stretched on his back, with his head directed northeastwards, with hands lying on his pubis. There were some drilled pebbles on his chest and a flint knife, a scraper and a fragment of bone stem – at the bottom of the grave. The man had 25 thin bracelets on his hands, evidently interleaved with bracelets made of bone beads. There was a triple row of the same beads on his head and 20 drilled arctic fox canines on its back. There were also rows of beads lying along his arms, legs and body, as well as across his chest and hip bones. Altogether, archaeologists found about 3500 beads. The Grave 2 containing remains of two children lying hand to hand was distinguished by enormous wealth. The southern burial labeled as S2 was oriented to north-northeast, while the northern one, S3 – to south-southwest. Both buried children were stretched on their backs, with their hands on their pubes. The burial was simultaneous, since large spears made of mammoth tusk occupied the space of both buried children. One of the main distinctive features of grave goods was two long spears (2.42 m and 1.66 m) and numerous javelins, a pendant in the form of flat sculpture of horse or saiga, drilled pebbles, a large bone sculpture of mammoth (S2), slotted disks, bone daggers, thousands of beads along the skeleton bones and on the skulls. It's interesting that there were also two nail bones of cave lion or panther. Detailed description of the grave goods and its interpretation may be found in the above-mentioned works by the author of excavations.

The author of excavations believed that the grave pits

were dug at the surface of soil and occupation layer, 15 cm above its contact with underlying loam at 65 cm and 74 cm (Burials 1 and 2, respectively). The graves were narrow, with steep walls, which excluded their digging in permanently frozen soil with the use of burning (Bader, 1984. P.8). The bottom of both graves was dusted with coal and red ocher. Soil above the graves was also dusted with ocher. O.N. Bader thought that the paired burial (Grave 2) was older than the Burial 1. The grave was dug in the centre of a large dwelling, probably where the central hearth was situated. There was also an adult man buried above the grave of adolescents, in its upper part, near its surface. He was “stretched on his back, without head; bones of this skeleton were non-extant; they were traced as feeble white calcined streaks” (Bader, 1984. P.8). The dwelling had been abandoned, but after a short period there were three new dwellings built 30 m down the slope. According to the author, the man buried in the Grave 1 belonged to this new group. In the upper part of this grave, just near its surface, there was a large stone lying on a thick ochre spot and a female skull without teeth and a lower jaw bone lying near it. The condition of the latter suggested that it had long been at the surface. First, it was supposed that it was a burial destroyed and pulled apart by solifluction, but later O.N. Bader started to regard this skull and the underlying male burial as one burial with complex ritual (Bader, 1967, 1998).

Reconstruction of clothing. Based on the vast number of beads in both graves and their arrangement along arms, legs, across the skeleton, above and below it, in rows, the author assumes that they were sewn on some clothing, which allowed him to reconstruct it. For the man, it seemed to be a fur or leather malice-like shirt, long breeches sewn with light moccasin-like shoes, and a hat decorated with 20 drilled arctic fox canines on the back. Moreover, the author tries to reconstruct some cloak-like upper garments. Shoes of the child S2 are reconstructed as mukluk-type high fur boots tied above knees. The hat has richer ornaments than that of the adult man: in addition to three rows of beads at the front and at the back, as on the male skeleton S1, it has arctic fox canines on its top and a small flat ring, perhaps for tying together arctic fox tails on the hat. The beads found on S3 confirm the reconstruction of clothing, but allow finding some differences. Its headdress is represented by a headband, which is also sewn with three rows of beads, and a hood or a cape (Bader, 1984, 1998). “Clothing of the Sungir people may be considered as an initial form for the history of arctic costume” (Bader, 1984. P.9).

Absolute age of the burials. Dates of the burials are poorly consistent with each other and contradict the dates of occupation layer. Dates for the Grave 1 obtained in various laboratories are 4000 - 5000 years later than the basic array of dates obtained for the occupation layer. According to the Oxford laboratory, the Graves 1 (S1) and 2 (S1, S2) are simultaneous and 4000 years later than the settlement. Dates obtained in the Arizona laboratory suggest simultaneity of the Burials S2 and S3, which is consistent with archaeological observations regarding the burial of adolescents in one grave and corresponds to the

occupation layer dates. According to the same laboratory, the Sungir 1 burial is much younger – 19160 ± 270 (AA-36473) than the burial of adolescents and the occupation layer. The problem is exacerbated by the fact that the occupation layer and the upper part of grave pits were disturbed by complex cryosolic deformations, including frost wedges (Lavrushin *et al.*, 2000). A recent dating of the skeleton from Sungir 1 showed older age as compared to earlier analyses (Dobrovolskaya *et al.*).

Of course, the most important reliability criterion for radiocarbon dates is their closeness and consistency. But, as Yu.V. Kuzmin says, unfortunately, new results of radiocarbon dating do not solve old problems caused by the fact that the geological structure of Sungir do not have any features that could help us to find at least one chronological limit of burials (Kuzmin *et al.* 2004).

II. Palaeoanthropological finds

Anthropologists have managed to use the following finds: Sungir 1 – a skeleton and a skull of an elderly man; Sungir 2 and Sungir 3 – skeletons and skulls of children; Sungir 4 – a diaphysis of a hip bone from the Grave 2; Sungir 5 – a skull of an elderly woman without a lower jaw bone (?); Sungir 6 – a lower jaw bone of a woman (?)



Sungir 1.

Craniology. The skull and the skeleton of an elderly man found in the burial discovered at the site in 1964 were first published by G.F. Debets (Debets, 1967). It was a preliminary publication and many dimensions were approximate. Although the skull is preserved quite well, impressed neck bones have displaced the skull base and caused dis-

placement of bones in the left temporoparietal region. The cerebral cranium is described very briefly. The author mentioned quite large longitudinal diameter and average transversal and altitudinal diameters, moderate forehead slope, well-developed glabella, large mastoid and above-the-average development of nuchal muscles. The main feature of the facial skeleton structure noticed by G.F. Debets was very large upper height of face and all the lateral dimensions of facial skeleton – upper width of face, bizygomatic diameter, biorbital and middle width of face and lower jaw bone width. Such average dimensions are today found only among East Siberian populations, among the Eskimos and some groups of Native Americans. Except for the face height, such dimensions are frequent among the European Cro-Magnon men, too. The author draws attention to a combination of small nasal protrusion angle (220) and high nasal bridge – a combination that cannot be found among average dimensions in series. In general, racial features of the skull are indistinct. Such a skull can be found in any European population. But the Zhoukoudian skull No. 101 (China) is also similar to the Sungir 1 skull by a number of measures. The author thought that there were no objections to considering the Sungir man as “a representative of the Cro-Magnon type in a broad sense of this term covering all the Late Paleolithic people of Europe, except for, perhaps, “Grimaldian Negroids” (Debets, 1967. P.164). We should say here that G.F. Debets accepted the theory of quite early formation of racial features common to modern mankind, according to which the main features of three big races could already be found in the morphologic type of Upper Paleolithic men. According to him, the Upper Paleolithic population of Europe is close to modern Europeans in terms of nasal protrusion and horizontal profiling of face (Debets, 1950, 1955, 1956, 1961).

The skull was further studied by V.V. Bunak (Bunak, 1973). He examined the skull after small restoration done by M.M. Gerasimov. V.V. Bunak described the skull in more details and in comparison with other Upper Paleolithic finds from Europe. He noted that among Late Paleolithic craniological material only Solutrean skulls were shorter than the Sungir skull and only Cro-Magnon skulls were wider. The skull S1 was characterized by moderate mesocrany, ortho- and metriocrany. In terms of fronto-parietal and asterion-parietal indices, the skull occupies mean position in series of Late Paleolithic variants. While describing facial skeleton, V.V. Bunak also lays an emphasis on large dimensions of facial skull amounting to 53% of cerebral module – a value that is close to values characteristic for modern man. While comparing the skull S1 with other finds, V.V. Bunak mentions their common feature – signs of increased vertical and decreased horizontal profile, a combination that is quite rare among modern racial variants. The main message of V.V. Bunak’s report at the 9th International Congress of Anthropological and Ethnographical Sciences in Chicago (Bunak, 1973) was the search for a place of the Sungir skull among other Late Paleolithic skulls. Empirical analysis allowed him to detect three morphogenetic tendencies for about ten male skulls from

forty Upper Paleolithic skulls well-known for anthropologists. However, these tendencies were not very pronounced and were represented by the following variants:

1 – Deviation from the average type towards longer, wider and lower braincase combined with average width and low height of facial skeleton; 2 – Shift towards hypsicrany with average skull width, combined with high and average-wide face and high, average-wide or narrow nose; 3 – Deviation from the average type towards short, wide and high skull combined with wide nose.

However, according to V.V. Bunak, similarity of metric and descriptive features of European Late Paleolithic skulls is distributed quite ambiguously. The most similar were the skulls from Sungir and Předmostí 3, especially in their facial dimensions, which does not exclude considerable differences in their structure noticeable during visual inspection. Its other features are similar to those of the skull from Chancelade. Morphological tendencies on Upper Paleolithic skulls are not as pronounced as on skulls belonging to later periods. The above-mentioned variants belong to early stages of differentiation and early forms are characterized by preservation of primitive features or atypical combinations of features not common to modern man (Bunak, 1973).

In contrast to G.F. Debets, V.V. Bunak, who adhered to the hypothesis of craniological polymorphism of fossil forms (Bunak, 1951, 1959, Bunak, 1961), believed that morphological complexes characteristic for the Upper Paleolithic men did not reflect the modern craniological differentiation and that modern intraspecific taxa of mankind had not formed at that time, yet.

V.P. Alexeyev dedicated several pages in his summary “Palaeoanthropology of the Earth and Formation of Human Races. Paleolithic Age” to morphology of facial skeleton of the male skull Sungir 1 (Alexeyev, 1978. P. 185-187). In one of his earlier works (Alexeyev, 1976) he gave reasons for ‘proto-mongoloid’ nature of the Sungir 1 skull, based on the nasal protrusion angle of 22 degrees and certain flatness of facial skeleton at the nasion level, as well as on largeness of facial skeleton, including palate.

As is customary in Russian paleoanthropology, while differentiating European and Asian forms, V.P. Alexeyev attached great importance to horizontal profile angles of facial skeleton, nasal protrusion angle, as well as dacryal and symotic indices and compared so-called ‘proto-mongoloid’ forms from the Upper Cave of Zhoukoudian and from Dundianyan (Weidenreich, 1938-1939, Woo Ju-Kang, 1959) to Upper Paleolithic skulls from Europe (Alexeyev, 1978. P. 185-187). It turned out that the Sungir 1 skull, as well as the Skull 101 from Zhoukoudian, fell within European variations and therefore had to be excluded from consideration while analyzing early stages of formation of Asian finds, though two other skulls from the Upper Cave, 102 and 103, and the skull from Dundianyan demonstrate a shift towards mongoloid features.

In the multi-authored monograph “Sungir. An Anthropological Study” published in 1984 (Sungir..., 1984) interpretation of materials from Sungir pretty much re-

flected the condition of several problems of paleoanthropology and anthropogenesis theory topical for that time. In particular, the Sungir children were studied in terms of possible inter-subspecific miscegenation of Neanderthal men and Sapiens or stadial transformation. Some researchers thought that dating of the burials (according to the Groningen laboratory, it was then believed that it was within the range of 24-25 thousand years ago) and ‘morphological transitivity’ of the paleoanthropological materials from Sungir confirmed existence of the Neanderthal stage of anthropogenesis (Sungir... P.3). The work included results of a wide range of studies: craniology, osteology, odontology, micromorphology and radiology.

Results of more detailed morphological analysis of the Sungir 1 skull are published in a posthumous work by V.V. Bunak (Bunak, Gerasimova, 1984). It was based on a very detailed study of the main structural elements of the skull – supraorbital region pattern, mastoids, cranial sutures, individual bones of cerebral and facial skeleton – in wide comparison, including both earlier and modern forms. The supraorbital region of the Sungir skeleton shows a set of features characteristic for skulls of fossil men of modern type (neoanthropi): slight narrowing in the postorbital region, moderate protrusion of zygomatic processes, dissected surface pattern. The mastoid measured according to Broca (Broca, 1875) and Zoja (Zoja, 1864) and the height-to-width ratio (according to Zoja), the value of which does not even transgress with the data for paleoanthrop, evidently testified that the skull belonged to modern man. As for such characteristics of braincase as bone thickness, capacity, general dimensions, the Sungir 1 skull also belongs to the skulls of modern type. A distinctive feature of the neurocranium is its mesocrany being a consequence of decreased longitudinal diameter (at the boundary between small and average values of the Upper Paleolithic range) and increase in transversal diameter. Contours of the neurocranium and namely their angularity, a roof-shaped vault with parallel sidewalls, a noticeable retro-orbital narrowing testify the preservation of features common to the Upper Paleolithic variants. The facial skeleton strikes with its size, alongside with the absence of archaic features. Due to the face height, the skull represents an exception in the group of Upper Paleolithic skulls from Europe. Large dimensions are also characteristic for the face width, as well as alveolar width and palate size. Horizontal profiling of the facial skeleton reveals the disharmony specific for Upper Paleolithic skulls. Vertical profile angles suggest the mesognath. The nasal protrusion angle is comparatively small, while the nasal bridge width and protrusion are average. The lower jaw bone has all the features characteristic for lower jaw bones of modern man. The combination of features shown by the Sungir 1 skull is found very rarely among modern racial variants, while among fossil skulls the closest analogies are: the Předmostí 3 skull (Moravia), on the one hand, and the Zhoukoudian 101 (China), on the other, i.e. the Sungir 1 skull corresponds to the generalized type of *H. sapiens* and belongs to the group of Upper Paleolithic skulls from Europe, which is distinguished – in spite of strong polymorphism – by certain neutrality, ab-

sence of sharp deviations towards wide nose, flat face or, in contrast, jaw protrusion. Similarity of these forms is caused by the fact that they evolved in one direction – not only in Europe, but also within northern Eurasia (Bunak, 1973, Bunak, 1980, Bunak, Gerasimova, 1984). V.V. Bunak proposed the following taxonomic designation of the studied find – *H. wurmensis neoanthropus ost-europaens sungirensis* (Bader, 1984. P.98), or *H.sapiens fossilis sungirensis*. The latter specification of place played a low-down trick on Bunak's colleagues, who later prepared a new version and a new publication of materials and called it “*Homo sungirensis*”, involuntarily granting this form a status of new species.

Osteology. The first description of postcranial skeleton was also given by G.F. Debets (Debets, 1967). This description contained metric characteristics of long bones. The author noted long length of the bones, especially the collar bone, and made a conclusion about clearly gracile structure of the shoulder girdle, based on the ratio between the diaphysis circles and sections and the length of shoulder and forearm bones. The femur was solid, in contrast to the shin bone, which was rather similar to upper extremity bones in terms of the ratio between its length and width. The author also noted platynomy of the shin bone and the platimetry of the femur, which is considered to be characteristic for the Cro-Magnon men, as well as ratios between distal and proximal segments of both extremities, which are more characteristic for modern populations of the tropical zone, but rarely found in Upper Paleolithic Europe. Based on the formula proposed by G.F. Debets making allowance for length and ratios of bones, anthropologists have calculated the body length of the Sungir man (180 cm) and his weight in case of average development of fatty layer (71 kg).

Later, a more detailed study of the postcranial skeleton Sungir 1 was performed by E.N. Khrisanfova, which served – to a certain extent and due to completeness of the studied skeleton – as a basis for studying of the palaeoanthropological aspect and reconstruction of the habit of fossil Hominidae (Khrisanfova, 1979, 1980, 1984, 2000). The author has shown the osteological polymorphism of postcranial skeleton of fossil men expressed in variations of proportions and general body dimensions and hypothesized that it reflected the adaptive reaction of fossil men populations. Many morphotypical features of the Sungir man place him in close quarters with modern Arctic populations and, in part, with the Neanderthals. These are: exceptionally heavy build, pronounced brachymorphia of upper part of body, well-developed mesomorphic component, very solid skeleton. The ratio between weight and body surface corresponds to the group maximum of modern man and is close to that of conventional Neanderthals (Khrisanfova, 1978, 1980). On the other hand, Khrisanfova thinks that the features of postcranial skeleton have some specific, archaic features placing the Sungir man in close quarters with “Sapientic Mousterian men from East Europe (Romankovo, Samara, Shkurlat) and “proto-Cro-Magnon men” from Western Asia (Skhul). These are: tallness, ab-

solute and relative elongation of forearm and shin, a tendency to short body, i.e. features common to initial constitutional specifics of population and mainly characteristic for groups of southern origin.

The further development of this topic may be found in a monograph published in 1984 and containing a very detailed analysis of postcranial skeleton performed by E.N. Khrisanfova. The research program includes determination of 202 features and 72 indices selected on the basis of the need for complete and detailed characterization of the studied skeleton and the extent of previous investigation of comparative materials (Khrisanfova, 1984). The author studied linear and lateral proportions of the adult man S1, proposed the reconstruction of body length and build in general, described long bones of upper and lower extremities, hand and foot bones, shoulder girdle bones and pelvis, as well as axial skeleton. The general build of the Sungir man was considered by E.N. Khrisanfova as a kind of Paleolithic tall athletic variant with exceptional for modern man shoulder width, adapted to severe living conditions in the periglacial zone (Khrisanfova, 1984. P.107).

The Sungir individual had slightly shortened arms as compared to legs, which was considered by Khrisanfova as a ‘Neanderthaloid’ feature, though internal proportions of extremity segments are absolutely those of Cro-Magnon type, which is especially evident in elongation of shin. The lateral proportions of S1 are distinguished by exceptional peculiarity. They testify sharply brachymorphic proportions of the upper part of body, which is especially remarkable considering his tallness. The conventional index of the ratio between leg length and body length suggests a shift of the individual's proportions towards ‘gigantism’. Individual bones are described by the author in comparison with a wide range of fossil forms and modern population groups. The author notes the absolutely ‘sapientic type’ of long bones, but also points at some ‘primitive features’ such as platimetry, femoral neck flatness, a tendency to rounding of diaphysis in its middle, large humeral head, relative elongation of radius neck, absolute solidity of humerus epiphyses, etc. A very detailed study of hand bones allowed the author to make a conclusion that despite of large fingers the hand was brachydactylic, very large, with elongated carpal and metacarpal parts. The foot is very large and solid, and the ankle bone is especially large. The first instep bone and the first finger are much longer than the group maximum for modern men. The foot structure does not show any similarities with any certain types, but most of its features fall within variations of Caucasoid and Negroid forms (Khrisanfova, 1984. P.123). The shoulder girdle structure is characterized by exceptional length of the collar bone, which is much longer than the upper limit of group variations among modern men. According to Khrisanfova, brachymorphia of the upper part of body could be not only an individual, but also a population feature, “placing the site dwellers in close quarters with the Neanderthals from the periglacial zone” (Khrisanfova, 1984. P.125). The pelvis of the Sungir man was high and narrow, with a very large cotyloid cavity.

The S1 skeleton showed some features characteristic for functional complexes. On the upper extremity skeleton they are connected with work hypertrophy of the hand, with manifestations of anatomic and functional dexterity. On the other hand, the signs of 'power adaptation' manifest in great height development of first radius joint components and widening of nail bones are more pronounced on the left. E.N. Khrisanfova considers some specific features of the left foot and the lower extremity as a whole in terms of morphofunctional asymmetry and connects them with the "complex of hunker position" and other statistical "rest poses", with main support on the left leg (Ibid. P.128).

According to the morphology of postcranial skeleton, E.N. Khrisanfova considered the taxonomic position of the S1 individual as *H. sapiens sapiens* close to the Cro-Magnon variant (tallness, elongation of middle parts of extremities, platynemy of shin bones, high and narrow pelvis, ankle bone type, large brachydactylic hand, etc.). At the same time, there are some features placing the Sungir 1 man in close quarters with the Neanderthals, i.e. this skeleton is close to a group of Middle and Upper Paleolithic forms having both sapientic and neanderthaloid features. The author also noticed the disharmony, 'looseness' of morphological correlations while comparing homologous segments of upper and lower extremities and, above all, hand and foot of such forms as Sungir 1 and Skhul 4. While making racial and diagnostic comparisons, E.N. Khrisanfova noted insufficient differentiation of the studied skeleton. In many osteometric features it demonstrated primary closeness to modern populations of Europe and Africa and in some features – to so-called 'natural populations' in general.

The skull Sungir 1 served as the basis for waxed reconstruction. Unfortunately, M.M. Gerasimov left nor his description of the Sungir 1 skull, nor his work aimed at the skull restoration and the face reconstruction. Reconstruction of the Sungir man appearance based on the slightly 'rejuvenated' skull, since his biological age was 50-55 years, gives us a figure of a handsome man, about 40 years old, with wide shoulders, of clearly athletic build. It comes under notice that he has slightly flat upper part of the face and the narrow forehead, the roof-shaped cranial vault, slightly protruded nasal bones giving his appearance a touch of Mongoloid features, and it is noteworthy that the 'Mongoloid nature' of the Sungir skull is more pronounced than that of the skull from the Upper Cave of Zhoukoudian (China).

A monograph published in 2000 – "Homo *sungirensis*" – does not contain any crucially new information in relation to morphology of the Sungir 1 skull, except for the study of the skull craniotrigonometry. This program has been developed by one of the authors of this essay (Vasilyev, 1999, 2000). It is based on angular parameters of various skull planes and allows us to estimate the relativity of particular dimensions, i.e. describes not so much dimensions of skull and its parts as its morphogenetic elements, which are not easy to compare on skulls of different size. According to the angular skull morpho-

metry, remains of the Sungir man fell into the same group as such finds as Florisbad, Markina Gora, Mladeč Lautsch 1, Oberkassel, Předmostí III, Zhoukoudian 101 and Fish Hook. This group is characterized by average height of zygomatic bone, relatively narrow base of frontal process of maxillae and piriform aperture, widened middle part of facial skeleton.

T.I. Alexeyeva, in a chapter called "Anthropological Profile of the Sungir Man and His Taxonomic Position Revisited" (Alexeyeva. Ibid. P.180-192), repeated some conclusions made by previous researchers (Debets, 1967, Bunak, 1973, Alexeyev, 1976, 1978, Bunak, Gerasimova, 1984) and concluded that there were no special differences between them, despite of their different views of race formation. "The Sungir man is peculiar, but he does not go beyond variations of 'Upper Paleolithic men from East Europe'". Truly speaking, it's hard to understand what the author meant, since the whole East Europe is represented by two skulls of adult individuals from Kostenki (T.I. Alexeyeva herself noted the peculiarity of the skull from K-14!), the skull Sungir 1, two children skulls from the same site (age – inf II) and two children skulls from Kostenki (age – inf I). With a view to specify the position of the S1 skull among other Upper Paleolithic finds, she used the canonical analysis. 5 analyses with intermittent increase in the number of compared skulls due to exclusion of some features and decrease in the number of skulls due to increase of analyzed features led the author to the conclusion that had already been made by previous researchers on the basis of empiric studies – that the Sungir 1 skull belonged to a wide polytypic species of the fossil *Homo sapiens* represented by rare remains found in vast territories of northern Eurasia. As for the osteological data offering an opportunity to estimate the Sungir man as a peculiar Paleolithic tall athletic variant with exceptional shoulder width adapted to severe living conditions in the periglacial zone (Khrisanfova, 1984, 2000), they were supplemented with results of detailed micromorphological studies (Mednikova 2000, Dobrovolskaya, 2000). These studies testify that the strategy of skeleton solidity formation and hematogenesis opportunities of the Sungir man differed from those of the Neanderthals. The Sungir 1 individual demonstrates large dimensions of long bones with well-developed pattern, large epiphyses and large diaphysis perimeters with relatively and absolutely thin diaphysis walls and large medullar space. These specifics are, on the one hand, connected with the need for higher solidity of skeleton in conditions of increased physical load and on the other – with increased opportunities for hematogenesis in conditions of hypoxia in the periglacial habitat.

Summarizing the existing publications concerning the Sungir site and the human remains labeled as Sungir 1, we consider it possible to note the following:

1. For the time being, knowingly inconsistent 14C dates of the adult and the children burials do not allow us to consider the individuals found at the Sungir site as belonging to one population. Perhaps, current genetic studies will help us with that.

2. Since there are some stratigraphic and palynological evidence suggesting that the site could have two layers (possible belonging of the site and the adult burial to different ages, inaccurate archaeological dating of other finds, except for the two burials), the idea of 'clan cemetery' should be abandoned, as well as reconstructions of complex funeral rites and relations between the site dwellers on the basis of human remains found there.
3. According to the authors of this review, a tendency to emphasize the 'Neanderthaloid' nature of the Sungir finds postulated in the 1984 monograph (Sungir..., 1984) and in anthropological literature in general (Kozintsev, 1997, Anikovich, 2004, Mednikova, Zubov, 1984, 2000, 2004) is not represented in the morphology of the S1 skull. Upper Pleistocene forms with the underformed complex of skeleton features, as the S1 skeleton, do not imply the Neanderthaloid origin of such rudimental sapientic forms. These 'Neanderthaloid' features could rather be a manifestation of so-called Arctic adaptive type characteristic for both West European Neanderthals and to fossil Sapiens of the East European plain.



Sungir 2 and Sungir 3.

Skulls of individuals buried in the Grave 2 (Sungir 2 and Sungir 3) were first studied by T.A. Trofimova (Trofimova, 1984). A detailed odontologic study was conducted by A.A. Zubov (Zubov, 1984). The first study of postcranial skeleton was conducted by B.A. Nikityuk and V.M. Kharitonov (Bader, Nikityuk, Kharitonov, 1979, Nikityuk, Kharitonov, 1984) and supplemented by a

short radiologic summary (Bukhman, 1984). When the skeleton bones were found, they were well-preserved, but a vast number of grave goods, complicated clearing, labour-intensive recording (we should remember that it was almost 50 years ago) caused damage to children's skulls and postcranial skeleton bones and they required some restoration work performed by T.S. Surnina and G.V. Lebedinskaya. They also made waxed reconstructions based on children's skulls (Lebedinskaya, Surnina, 1984).

Later on, these materials without considerable changes were published in a multi-authored monograph (*Homo sungirensis...*, 2000), but also supplemented with articles written by a group authors who published their considerations regarding sex and age of these finds (Mednikova *et al.*, 2000, Kozlovskaya, 2000). Examination of preadolescent fossil forms is very interesting due to a number of reasons. First, it affords an opportunity to use these preadolescent forms in the taxonomic analysis alongside with adult ones. Second, it is very important for identification of ontophilogenetic relations in anthropogenesis, since evolutionary changes partly consist in transformation of the course of ontogenesis. Third, correct restoration of definitive features based on features of young forms. If there is no doubt in determination of biological age (which is almost impossible), it is very interesting to study the rate of 'growing-up' as compared to modern man (Kharitonov, 1995)

Sex and age of the buried individuals were determined on the basis of their teeth and postcranial skeletons. The individual S2 had only permanent teeth; as for third molars, only the right M3 has cut, while the others are sitting deep in alveoli. Moreover, second lower premolars, both second upper molars and a right lower canine have not reached their final position in tooth alignment. Condition of the tooth system of the individual S3 testifies younger age: a set of permanent teeth is incomplete; remaining primary molars are close to dedentition, first premolars are sitting in alveoli. Analysis of mesio-distal and vestibulo-lingual diameters of crowns, indices and modules of crowns (according to R. Martin), as well as heights of crowns allowed A.A. Zubov to determine sex and age of the individuals with sufficient certainty: S2 - ♂, age - 11-13 years old; S3 - ♀, age - 9-11 years old. (Zubov, 1984).

Morphology of the postcranial skeletons showed the following results: sex of S2 - ♂, age - 12-13 years old; sex of S3 - ♀, age - 9-10 years old. These figures were based on the data concerning the length of collar bone characteristic for modern man and the size of lateral diameter of humerus diaphysis. In a later work (Nikityuk, Kharitonov, 1984) age of S3 was determined on the basis of longitudinal and lateral dimensions. Determination of the scatic-pubic index for this skeleton allowed the scientists to consider it as belonging to a girl (Bader, Nikityuk, Kharitonov, 1979). As for the individual S2, the growth of lateral dimensions was slower than the growth of longitudinal ones as compared to modern children, and longitudinal dimensions of humerus, cubitus, radius, femur and shin bone corresponded to development of modern 12-14-year-old adolescent. These measurements may be

supplemented with a radiological study. According to radiograms, the individual S2 was 13-14 years old, and S3 - 11-12 years old (Bukhman, 1984). The morphological and radiological data are mutually consistent. Based on development of hip bones, age of the buried individuals was estimated as no more than 13 years old (Bruzek, Novotny, 1993). Later on, age and sex of individuals buried in the Grave 2 were again examined by a different group of authors (Mednikova *et al.*, 2000). They also used morphological criteria and eventually agreed with earlier measurements. Meanwhile, biological age of the individual S2 determined on the basis of the radiological diameter of femur turned out to be 19.94 years old ± 14.5 months and that of the individual S3 - 7.31 years old ± 14.5 months (according to the regression equation for boys) and (according to the regression equation for girls) - 7.56 years old ± 16.4 months (Kozlovskaya, 2000) Based on these strange figures, osteometric indices and diaphyseal radiographic data, the authors concluded that "the Sungir individuals keep ahead children of similar tooth age from various paleopopulations of modern man" (Mednikova *et al.*, 2000. P. 57-59).

Genetic data showed that the individual S3 was a female (Poltoraus *et al.*, 2000).

Craniology. In her general estimation of craniological features characteristic for the children from the Grave 2, T.A. Trofimova have first of all mentioned a number of modules of brain case and facial skeleton that are considerably larger than those of modern children.

Skull S2 is large, mesocranic, pentagonoid. The author pays special attention to poor development of mastoid processes, signs of 'chignon-shaped' napex, low temporal bone, with a straight edge. The face is characterized by large values of upper height and bizygomatic diameter as compared to modern children (according to: Sysak, 1960). The face is mesognathic in terms of overall facial angle and prognathic in terms of alveolar one (M.72-810 and M.74-540). The piriform aperture is narrow and high, its lower edge has the shape of sulcus prae-nasalis. The orbits are low and rectangular. Trofimova considered such characteristics as protruding forehead and prognathism as probable manifestation of equatorial features. According to her, the chignon-shaped napex and the structure of temporal bone suggest preservation of several Neanderthaloid features along with features characteristic for modern man.

Skull S3 is also very large. It is distinguished from the above one by its brachicrany, but it is also pentagonoid with prominent frontal and parietal protuberances and protruding napex. At the same time, it is not so 'chignon-shaped', while the forehead is less protruding. In terms of absolute values, the facial skeleton is much larger than that of S2, though the latter belonged to the male of older age. The orbits are larger and higher, the piriform aperture is wider, with the lower edge of infantile shape. Nasal bones are very prominent (M. 75(1)-290). The author designates the girl's skull S3 as belonging to the Cro-Magnon type with preservation of several Neanderthaloid features.

While characterizing lower jaw bones of the Sungir children, the author mentions their very large dimensions being much larger than those of modern children, which is connected with overall large dimensions of the Sungir skulls. In addition to comparison with modern children, Trofimova compared the Sungir children with the child from Gorodtsovo (Kostenki XV, Yakimov, 1957), Předmostí XXII (Matiegka, 1934), and the Neanderthal child from Teshik-Tash (Debets, 1940, 1947, Gremyatsky, 1949, Alekseyev, 1973). The author pointed out large dimensions of brain cases of all the compared skulls and similar features of particular skulls. Comparison with the skull from Teshik-Tash was caused by the author's hypothesis that the adolescents' skulls had some 'Neanderthaloid' features. In this connection she considered some indices characterizing specific features of occipital region and demarcating 'Paleoanthropi' and 'Neoanthropi' (Roginsky, 1951). Each of these indices taken apart does not allow us to determine the systematic position of the Sungir children with full confidence, due to considerable transgression of these figures. However, overall examination of the indices allowed the author to make a conclusion about some resemblance of the Sungir skulls with that from Teshik-Tash (Trofimova, 1984. Table 7. P. 154).

While analyzing craniological features of the children's skulls, T.A. Trofimova restored definitive dimensions of adult forms on the basis of values characteristic for children - a method widely used in Russian paleoanthropology in those years (Yakimov, 1957, Debets, 1961, Alekseyev, 1973, 1978, Gohman, 1984). The author concludes that the skull S2 (adult) is closer to the skull S1, than the skull S3. But at the same time she states the presence of equatorial features for the skull S2. Comparison of the male skull S1 and the skulls of 'adult' individuals S2 and S3 shows that it falls in between these forms demonstrating the largest value of upper facial height. In conclusion, we should note that T.A. Trofimova was somewhat contradictory in her opinions. She adhered to V.V. Bunak's concept of craniological polymorphism of the Upper Paleolithic mankind and at the same time shared Y.Y. Roginsky's (1949, 1969) point of view on formation of modern races as early as in Upper Paleolithic age (Trofimova, 1984. P. 155). The same article was published in the monograph *Homo sungirensis* (2000), but with some critical comments of one of the authors of the present report (Gerasimova, 2000).

The same monograph contains the results of cranio-trigonometry study of S2 and S3 acquiring special importance for comparison of adult and preadolescent forms.

Cranio-trigonometry (angle morphometry of skull)

Sungir 2

As a matter of fact, angle dimensions of the brain case suggest the Sapientic nature of the individual from the burial Sungir 2. It is interesting to point out that angle characteristics for triangles ast-l-ast, au-l-au, po-b-po, n-b-au, n-b-ast and ba-au-b reflecting the configuration of

occipital and frontal regions and the brain case are generally similar to those for the skull from Teshik-Tash. We consider this similarity as a uniform tendency of the whole Homo genus to roundness of brain cases and, therefore, greater curvature of investing bones at the early age.

In terms of some angle parameters of facial skeleton, the individual from Sungir 2 is close to such finds as Dolní Věstonice III, Markina Gora, Talgai, Předmostí III, Sungir 1, Cro-Magnon I and II. There is also some similarity with the individual from Teshik-Tash – in relatively small value of zygomatic bone height (fmt-infor-zm angle).

Thus, we can designate the child from Sungir 2 as belonging to the Homo sapiens taxon with full confidence. The skull is distinguished by strongly pronounced left-hand asymmetry of parietooccipital region. This asymmetry was probably intravital, since the skull was mainly lying on its base and was oriented in the sagittal plane in the excavation pit. Such asymmetry represents an indirect indicator of better development of parietal and occipital lobes of the left brain hemisphere. The asymmetry in position of auditory ducts is similar to that of the Sungir male. The comparative analysis showed that most angular dimensions of the Sungir 2 skull are similar to those of gracile forms like Dolní Věstonice III and Markina Gora. Some angle parameters of the brain case are also similar to the Teshik-Tash find. All these factors emphasize infantile characteristic for shape of the Sungir 2 skull.

Sungir 3

In terms of many angle characteristics describing relatively roundish shape of brain case, its occipital and frontal regions, the skull is similar to the Teshik-Tash find.

The comparative analysis showed that some angular dimensions of facial skeleton of the child from Sungir 3 are similar to such finds as Dolní Věstonice III, Cro-Magnon I and II, Zhoukoudian, Talgai, Markina Gora, Sungir 1, Mladeč Lautsch I. The relative width of piriform aperture is similar to that of the Teshik-Tash find.

Thus, in terms of most angle parameters, Sungir 3 belongs to the Homo sapiens taxon. The comparative analysis showed that some morphogenetic features of the child from Sungir 3 are close to those of eastern Sapientic forms (Zhoukoudian, Talgai) and to gracile European forms (Dolní Věstonice III, Markina Gora). Some parameters of the Sungir 3 brain case are similar to those of the Teshik-Tash find. Almost the whole brain case shows slight right-hand deformation. Judging by the position of the skull in the excavation pit, this deformation was probably intravital, as in case of Sungir 2. This asymmetry may suggest better development of the right brain hemisphere.

While comparing angle dimensions of two children from Sungir, we have noticed some resemblance in relative dimensions: ast-l-ast, au-l-au, po-b-po, ft-b-ft, b-ast-

l, b-n-au, b-n-ast, zm-n-zm, n-fmt-zm, nl-zpinf-infor, gn-1/2go-id. Such correspondence of dimensions may suggest not only the same typological background of both skulls, but also probable kinship of these individuals.

Odontology. The morphological description of dental arches shows the narrowness of the dental arch of the upper jaw bone of S2, which is almost U-shaped. Crowding is insignificant (on the lower jaw bone near the right canine); there are small diastemata on the upper (C-P1) and lower jaw bone (P1-P2). The occlusion is psalidontic, which is rare and not common for Upper Paleolithic men, but characteristic for modern man.

Upper and lower dental arches of the individual S3 are trapezoid due to angles formed by solid canines. The occlusion is moderate psalidontic, irregularities of the dentition may be explained by cutting of permanent teeth.

Dimensional features of crowns of all types of teeth belonging to the individuals S2 and S3 showed that, in spite of some differences (S2 has larger vestibulo-lingual diameter), they both represent a macrodontic population. Thus, VLcor of the central lower incisor of the both individuals is higher than that of the Peking man. The studied individuals are characterized by high indices of crowns of upper second molars. The author mentions that the crowns are higher than those of modern man and considers that as an archaic feature. The evolutionary-comparative analysis of teeth dimensions of the Sungir individuals showed strongly pronounced similarity of numerical information about teeth dimensions with early Upper Paleolithic individuals from Europe. Most teeth dimensions characteristic for the Sungir children are larger than those of late Upper Paleolithic individuals. In terms of odontometry, the author designates “the Sungir skulls as belonging to the early phase of Upper Paleolithic age, with preservation of some remnant features of the previous, Neanderthal stage of evolution” (Zubov, 1984. P. 169).

In addition to hypermacrodontism, the author identified a number of morphological features considered as archaic ones, placing the Sungir individuals in close quarters with Neanderthal men: 1. a solid median crest on the lingual surface of medial upper incisors (S2); 2. strongly pronounced molarization of second lower premolars (S2); 3. well-developed hypocone and slightly reduced metacone on first upper molars (S2); 4. overall shape of lower molar crowns, additional third-order elements of the chewing surface pattern on molars. In terms of all the other odontologic and odontoglyphic features, the individuals found in the Grave 2 (S2 and S3) are typical representatives of H. sapiens fossilis. At the same time, some characteristics such as mild or even absent spatulation of upper incisors, presence of tuberculum anomale, type II of the second metaconid sulcus, 4-tubercle lower molars, absence of distal crest on trigonid, the sixth tubercle and interradical enamel streak testify belonging of these forms to the western odontologic stem (Zubov, 1984, 2000).

Postcranial skeleton. The authors (Nikityuk, Kharitonov, 1984) publish a detailed osteoscopic description of remaining cervical, dorsal and lumbar vertebrae, ribs, blade and collar bones, long and small bones of upper extremity and foot bones and point out some 'peculiar' features, i.e. differences from modern man. In particular, they mention well-developed pattern on upper surface of ribs, flatness of the first rib of S3, peculiarity of the right blade bone of the same individual, the scapular end of breast bone that is wider than the sternal one – as distinguished from S2 having the humeral end that is considerably thinner than the sternal one. The humerus of S3 is smaller than that of S2 and has a different torsion angle. It is also more tortuous than humeri of modern man and has different ratio of epiphysis and diaphysis solidity. It is much more solid than the humerus of S2. The femurs of S2 are distinguished by well-developed pilasters, obtuse angles of the femoral necks and diaphyses. The femurs of S3 have a flattened diaphysis with thickness increasing towards epiphyses. The angle of femoral neck and diaphysis is wider than right angle. This list goes on, but the authors do not make any conclusions based on descriptive characteristics and allow their readers to explain them with individual variability. Much more demonstrative were metric characteristics. They were compared to those of the individual S1, the child from Teshik-Tash and modern children, the youth from Caves of Grimaldi and a series of children's skeletons of so-called natural population of the Knoll Indians (Sundick, 1978). The authors state the considerable size of collar bones of the Sungir individuals, which is comparable to that of the child from Teshik-Tash (though the latter's collar bone is more gracile). The humerus of the younger child (S3) is shorter, but more solid. Its least circumference is larger than that of the Teshik-Tash child and, of course, larger than that of modern men of the respective age. The dimensions of humeri, brachii, femurs and shin bones of the Sungir children are larger than those of the children from the 'natural' population of the Knoll Indians. The authors concluded that some differences between the adult man S1 and the children S2 and S3 in measuring features and indices are on one track as compared to modern population. It allows the authors to consider these differences not only as group but also as ontogenetic ones. At the same time, the differences between S2 and S3 are mainly explained by differences in age dynamics of their postcranial skeleton features. Higher

solidity of the S3 skeleton and signs of phenotypic discordance identified by the osteoscopic analysis allow the authors to speak about the possibility of genotypic differences, and it is quite surprising given the common burial of the children (Nikityuk, Kharitonov, 1984. P. 197). The authors who studied children's skeletons from the Grave 2 shared the idea of hybridization between *H. sapiens* and *H. neanderthalensis*.

Summarizing our historiographic review of works dealing with morphology of paleoanthropological finds from burials at the site of Sungir (Sungir, 1984, *Homo sungirensis*, 2000), we can say that most authors of these works interpreted the Sungir materials in terms of either possible miscegenation of Sapients with Neanderthals or stadial transformation, as well as intraspecific differentiation of *H. sapiens*. Some time ago all the Russian scholars adhered to the idea of transformation. But later the West-European Mousterian Neanderthals were estimated as a special taxon with common morphological features, territory and lifetime, with a very high degree of biological specificity, and the above-mentioned hypothesis started to lose its supporters. Nevertheless, the idea is not completely outdated, yet, and it is the 'intermediate character' of the Sungir forms that is used to explain belonging of 'transitional' industries and formation of Upper Paleolithic population of Europe, in terms of possible participation of European Neanderthals in this process (Anikovich, 1997, Kozintsev, 1997, Mednikova, 2000). Most probably, such a notion is explained by an old idea that *H. neanderthalensis* was a subspecies of *H. sapiens*. Although nothing contradicts the concept of co-existence of Sapientic and Neanderthal hominids in the same territory, transformation of the Neanderthal men into the early Sapientic type "implies the considerable rearrangement of growth gradients and genetic correlations that was hardly possible without loss of viability" (Bunak, 1980. P. 58).

The authors of this essay (S.V. Vasilyev, M.M. Gerasimova) share the ideas of species specificity of Neanderthal and Sapientic forms and of possible miscegenation between them on very early stages of development at the subspecific level of *Homo heidelbergensis*.

Bibliography

- ALEKSEYEV, V. P., 1973, "Polozhenie teshik-tashskoy nakhodki v sisteme gominid", In: *Antropologicheskaya rekonstruktsiya i problemy paleoetnografii*, Nauka, Moscow, P. 100-114.
- ALEKSEYEV, V. P., 1978, "Paleoantropologiya zemnogo shara i formirovanie chelovecheskikh ras", In: *Paleolit*, Nauka, Moscow, P. 186-189.
- ANIKOVICH, M. V., 1977, "Problema stanovleniya verkhnepaleoliticheskoy kultury i chelovek sovremennogo vida v svete dannykh po paleolitu Vostochnoy Evropy", In: *Chelovek zaselyaet planetu Zemlya, Globalnoe rasselenie gominid*, Moscow, P. 143-155.
- ANIKOVICH, M. V., DUDIN, A. E., LEVKOVSKAYA, G. M., LISITSYN, S. N., PLATONOVA, N. I., POPOV, V. V., PUSTOVALOV, A. Y., RODIONOV, A. M., 2012, "Uzlovye problemy stanovleniya verkhnego paleolita Evropy po dannym noveyshikh issledovaniy v Kostenkovsko-Borshchevskom rayone", In: *Megastruktura evraziyskogo mira: osnovnye etapy formirovaniya, Materialy Vserossiyskoy nauchnoy konferentsii*, Institute of Archaeology, Russian Academy of Sciences, December 4-6, Moscow, P. 12-16.
- BADER, O. N., 1959, "Paleoliticheskaya stoyanka Sungir na r. Klyazme", In: *Sovetskaya Arkheologiya*, No. 1.
- BADER, O. N., 1961a, "Stoyanka Sungir, ee age i mesto v paleolite Vostochnoy Evropy", In: *Trudy Komissii po izucheniyu chetvertichnogo perioda AN SSSR*, No. 18.
- BADER, O. N., 1961b, "Unikalnaya paleoliticheskaya figurka s reki Klyazmy", In: *Kratkie soobscheniya Instituta arkheologii AN SSSR*, No. 82.
- BADER, O. N., 1965, "Verkhnepaleoliticheskie pogrebeniya bliz Vladimira", In: *Vestnik AN SSSR*, Vol. 5.
- BADER, O. N., 1967, "Pogrebeniya v verkhnem paleolite i mogila na stoyanke Sungir", In: *Sovetskaya arheologiya*, No. 3.
- BADER, O. N., 1978, *Sungir. Verkhnepaleoliticheskaya stoyanka*, Nauka, Moscow, 271 p.
- BADER, O. N., 1984, "Paleoliticheskie pogrebeniya i paleoantropologicheskie nahodki na Sungire", In: *Sungir. Antropologicheskoe issledovanie*, Nauka, Moscow, P. 6-13.
- BADER, O. N., GROMOV, V. I., SUKACHEV, V. I., 1961, "Verkhnepaleoliticheskaya stoyanka. Sungir", In: *Voprosy geologii antropogena*, K VI kongressu INQUA v Varshave, 1961 g., Academy of Sciences of USSR, Moscow.
- BADER, O. N., 1979, "Nikityuk B.A., Kharitonov V.M. Postkranialniy skelet detey pozdnepaleoliticheskogo cheloveka iz pogrebeniy na Sungirskoy stoyanke (Predvaritelnoe soobshchenie)", In: *Voprosy Antropologii*, Vol. 60, P. 24-37.
- BUNAK, V. V., 1973, "Iskopaemy chelovek iz stoyanki Sungir i ego mesto sredi drugikh iskopaemykh pozdnego paleolita", IX Mezhdunarodny kongress antropologicheskikh i etnograficheskikh nauk, Chicago.
- BUNAK, V.V., GERASIMOVA, M.M., 1984, "Verkhnepaleoliticheskii cherep Sungir1 i ego mesto v ryadu drugikh verkhnepaleoliticheskikh cherepov", In: *Sungir. Antropologicheskoe issledovanie*, Nauka, Moscow, P. 14-99.
- BUKHMANN A. I., 1984, "Rentgenologicheskoe issledovanie skeletov detey s verhnepaleoliticheskoy stoyanki Sungir", In: *Sungir. Antropologicheskoe issledovanie*, Nauka, Moscow, P. 203-204.
- VASILYEV, S. V., 2000, "Cranio-trigonometry of skulls from the grave 2", In: *Homo sungirensis*, Nauchny Mir, Moscow, P. 253-254.
- GERASIMOVA, M. M., 2000, "Verkhnepaleoliticheskii cherep Sungir1 i ego mesto v ryadu drugikh verkhnepaleoliticheskikh cherepov", In: *Homo sungirensis*, Nauchny Mir, Moscow, P. 158-174.
- GREMYATSKY, M. A., 1949, "Cherep rebenka neandertaltsa iz grotta Teshik-Tash, Yuzhniy Uzbekistan", In: *Teshik-Tash. Paleoliticheskii chelovek*, Moscow, P. 137-182.

- DEBETS, G.F., 1940, “Ob antropologicheskikh osobennostyakh chelovecheskogo skeleta iz peshchery Teshik-Tash”, In: *Trudy Uzbekskogo filiala AN SSSR, Seriya istoriya, arheologiya*, Vol. 1, Issledovanie paleoliticheskoy peshchery Teshik-Tash, Moscow.
- DEBETS, G.F., 1947, *O polozhenii paleoliticheskogo rebenka iz peshchery Teshik-Tash v sisteme iskopaemykh form cheloveka*, Moscow.
- DEBETS G.F., 1967, “Skelet pozdnepaleoliticheskogo cheloveka iz pogrebeniya na sungirskoy stoyanke”, In: *Sovetskaya Arkheologiya*, No. 3.
- DOBROVOLSKAYA, M., RICHARDS, M. P., TRINKAUST, F., [in press], “Direct radiocarbon dates to the mid upper Paleolithic (Eastern Gravettian) burials from Sungir, Russia”, In: *Bulletins et mémoires de la Société d'Anthropologie de Paris*, Paris.
- ZUBOV, A. A., 2000, “Morfologicheskoe issledovanie detey iz sungirskogo pogrebeniya-2”, In: *Homo sungirensis. Verkhnepaleoliticheskii chelovek: evolyutsionnye i ekologicheskie aspekty issledovaniya*, Moscow, P. 256-270.
- ZUBOV, A. A., 1984, “Morfologicheskoe issledovanie zubov detey iz sungirskogo pogrebeniya”, In: *Sungir. Antropologicheskoe issledovanie*, Nauka, Moscow, P. 162-182.
- ZUBOV, A. A., 1968, “Nekotorye dannye odontologii k probleme evolyutsii cheloveka i ego ras”, In: *Problemy evolyutsii cheloveka i ego ras*, Moscow, P. 8-10, 56-65; 77-98.
- KOZINTSEV, A. G., 1977, “Perekhod ot neandertaltsev k lyudyam sovremennogo tipa v Evrope: evolyutsiya putem polovogo otbora?”, In: *Chelovek zaselyaet planetu Zemlya. Globalnoe rasselenie gominid*, Moscow, P.109-112.
- KOZLOVSKAYA, M. V., 2000, In: *Homo sungirensis. Verkhnepaleoliticheskii chelovek: ekologicheskie i evolyutsionnye aspekty issledovaniya*, Nauchny Mir, Moscow, P. 411-420.
- KUZMIN, Y. V., BURRS, G. S., JULI, J. T., SULERZHITSKI, L. D., 2004, “AMS 14 of the Upper Paleolithic skeletons from Sungir site, Central Russian plain”, In: *Nuclear instruments and methods in Physical Research*, B, vols. 223-224, h, 731-734.
- LAVRUSHIN, YU. A., SULERZICKY, L. D., SPIRIDONOVA, E. A., 2000, In: *Homo sungirensis. Verkhnepaleoliticheskii chelovek: ekologicheskie i evolyutsionnye aspekty issledovaniya*, Nauchny Mir, Moscow, P. 35-42.
- MEDNIKOVA, M. B., 2000, “Morfologicheskaya izmenchivost verkhnepaleoliticheskogo naseleniya: problemy rasseleniya i adaptatsii”, In: *Homo sungirensis. Verkhnepaleoliticheskii chelovek: ekologicheskie i evolyutsionnye aspekty issledovaniya*, Nauchny Mir, Moscow, P. 387-396.
- MEDNIKOVA, M. B., BUZHILOVA, A. P., KOZLOVSKAYA, M. V., 2000, In: *Homo sungirensis. Verkhnepaleoliticheskii chelovek: ekologicheskie i evolyutsionnye aspekty issledovaniya*, Moscow, P. 57-59.
- NIKITYUK, B. A., KHARITONOV, V. M., 1984, “Postkranialny skelet detey s verkhnepaleoliticheskoy stoyanki Sungir”, In: *Sungir. Antropologicheskoe issledovanie*, Nauka, Moscow, P. 182-202.
- POLTARAUS, A. B., KULIKOV, E. E., LEBEDEVA, I. A., 2000, “Molekulyarny analiz DNK iz ostankov trekh individov so stoyanki Sungir (predvaritelnye itogi)”, In: *Homo sungirensis. Verkhnepaleoliticheskii chelovek: evolyutsionnye i ekologicheskie aspekty issledovaniya*, Moscow, P. 351-358
- ROGINSKY, Y. Y., 1960, “K voprosu o vozrastnykh izmeneniyakh rasovykh priznakov u cheloveka (v utrobnom periode i detstve)”, In: *Antropologicheskii sbornik*, TIE, New series, Vol. 50, Academy of Sciences of USSR, Moscow, P. 3 -28.
- TROFIMOVA, T. A., 1984, “Cherepa detey epokhi verhnego paleolita iz Sungirya”, In: *Sungir. Antropologicheskoe issledovanie*, Moscow, P. 144-156.
- TROFIMOVA, T. A., 2000, In: *Homo sungirensis. Verkhnepaleoliticheskii chelovek: evolyutsionnye i ekologicheskie aspekty issledovaniya*, Moscow, P. 245-247.
- KHARITONOV, V. M., 1985, “Issledovanie evolyutsii individualnogo razvitiya v protsesse antropogeneza na paleoantropologicheskoy material”, In: *Voprosy Antropologii*, Vol. 75, P. 84-97.

KHARITONOV, V. M., 1995, "Filogeneticheskaya i ontogeneticheskaya dinamika priznakov postkranialnogo skeleta gomimid", In: *Voprosy Antropologii*, Vol. 88, P.145 -183.

KHRISANFOVA, E. N., 1979, "Paleoantropologicheskii aspekt konstitutsii", In: *Voprosy Antropologii*, MSU, Moscow, Vol. 62, P. 3-13.

KHRISANFOVA, E. N., 1980, "Skelet verkhnepaleoliticheskogo cheloveka iz Sungirya", In: *Voprosy Antropologii*, MSU, Moscow, Vol. 64, P. 40-68.

KHRISANFOVA, E. N., 1984, "Postkranialny skelet vzroslogo muzhchiny Sungir 1. Bedrennaya kost Sungir 4", In: *Sungir: Antropologicheskoe issledovanie*, Nauka, Moscow, P. 100-140.

KHRISANFOVA, E. N., 2000, "Postkranialny skelet vzroslogo muzhchiny Sungir 1", In: *Homo sungirensis. Verkhnepaleoliticheskii chelovek: evolyutsionnye i ekologicheskie aspekty issledovaniya*, Moscow, P. 193-217.