LATE ARCHAIC – EARLY MODERN HUMAN TRANSITION IN EASTERN EUROPE: A CASE OF LOCAL EVOLUTION BY SEXUAL SELECTION?

ABSTRACT: This article uses Darwinian theory of sexual selection to examine the transition from archaic to anatomically modern humans. Using data from numerous skeletal remains recovered from the Upper Paleolithic site of Sungir in Russia, it argues that, in addition to natural selection, also sexual selection needs to be considered in our evolutionary scenarios.

KEY WORDS: Archaic hominids – Anatomically modern humans – Sexual selection – Local evolution – Sungir

INTRODUCTION

After the discovery of a very late (36,000 B.P.) Neanderthal buried in Châtelperronian strata at Saint-Césaire, it has been widely believed that Châtelperronian, Szeletian and other Upper Palaeolithic industries which derived from the Mousterian were made by the Neanderthals (Stringer et al. 1984, Harrold 1989, Mellars 1989, Rigaud 1989). This view was largely speculative, because apart from Saint-Césaire itself, only teeth (also archaic) from the Châtelperronian layers at Arcy-sur-Cure have been used to support it. However, Sungir, an extremely important site situated near Vladimir, central Russia, and dated at 24,430 and 25,500 BP, has regrettably been neglected by most Western researchers, like many other sites in Russia. This site revealed an Upper Palaeolithic culture containing a number of Middle Palaeolithic elements and having common features with the Late Szeletian of central Europe and the Steleistskaya culture of the Kostienki region (Bader 1978, 1984). Bader, who excavated the site, believed that its culture was of a rather recent Mousterian origin and had nothing to do with the Aurignacian.

DATA FROM SUNGIR

Skeletal remains of at least nine individuals have been found at Sungir. Most of them are quite fragmentary, but three skeletons (one male and two children) are well preserved and have been subjected to detailed studies by several specialists (Debetz 1967, Bunak 1973, Zubov, Kharitonov 1984). All the skulls (including the poorly preserved second adult skull) are anatomically modern, although a few archaic traits have been noted on the crania of the children (Trofimova 1984). The male cranium is very similar to Zhkoudian Upper Cave 101 (Debetz 1967), but resembles also several European Upper Palaeolithic specimens (Bunak, Gerasimova 1984). The second adult skull, whose sex is uncertain, looks quite Cro-Magnon-like (Gerasimova 1984). The teeth of children are very large and intermediate between those of Neanderthals and modern humans (Zubov 1984).

The postcranial skeleton of the male is largely modern but displays a number of archaic features. Specifically, high stature (181 cm) and characteristically Upper Palaeolithic limb proportions (elongated distal segments of arms and
legs), are accompanied by an enormous shoulder width (the right clavicle is 190 mm long!) indicative of an extremely brachyomorphic surpassing even that of the Neandertals (Khristianova 1984). Other Neandertal aponomorphies noted by Khristianova include large, round and convex heads and large condylo-diaphyseal angles of the humeri. Such sizeable bone anatomy, with other factors being involved, resemble only one of the parental populations in an entire system (cranium) while displaying intermediate features in other systems (teeth, postcranial). To make these questions even more intriguing, it should be recalled that the earliest representatives of modern mankind, the Skhul – Qafzeh people, also show mosaic morphology, but the pattern is reverse. Here, it is the postcranial skeleton that shows indices of modernity and very dolichomorphy, the teeth, despite being large, are also closer to the modern condition (Trinkaus 1989), but the skull shows quite a number of archaic features (see Corruggini 1992, for the latest assessment). The authors of the original description regarded this as an evidence of evolutionary change (McCown, Keith 1939), while others believed it to be a result of hybridization (Thomaz 1975-78).

In this case, the first possibility should obviously be preferred. The primary reason is that the Skhul – Qafzeh group is quite early (ca 100,000 BP), and it may be expected that the Neandertal morphological complex did not exist at that time. Secondly, the cranial capacity of this group bears a certain resemblance to those of modern African and Australians (Brace, Tracer 1992, Stringer 1992), while the paleoanthropology of man (Trinkaus 1992). Both facts, together with the DNA data (Stoneking, Cann 1989), point toward Africa, where this warm-adapted population or its ancestors could have originated. It is likely that a small number of people, the body build, and, making it more dolichomorphy, gracile, and modern, while the cranial structures were more conservative because of being less influenced by climate. The culture of these people was Mousterian because, single isolated technological events notwithstanding, the Upper Paleolithic, too, did not exist at that time. Interestingly, a similar morphological pattern (almost modern "warm adapted" postcranial skeletons, and skulls which are considerably more archaic) is seen in much later Upper Paleolithic samples from central Europe – Mladeč and Předmostí. "It is hard to explain," Wolfpff (1990b) writes, "why these earlier Europeans, who maintained an ongoing adaptation to the frigid conditions of the later Würm, have much higher brachial and cranial indices than living Lapps or Eskimos". The simplest answer would be that these earlier Europeans, who maintained an ongoing adaptation to the frigid conditions of the later Würm, have much higher brachial and cranial indices than living Lapps or Eskimos. The simplest answer would be that their way of life was not yet fully developed to the point of developing dolichomorphic adaptations to the cold, or adapted by more efficient cultural means. This was easier for them than for the Neandertals since their culture was superior.

Indeed, while most researchers believe Saint-Césaire to be fully Neandertal, Wolpoff (1989b) has noted some isolated modern features even in this specimen. Eleven millenia, or 440 generations, separating Sungir from Saint-Césaire, would presumably have enough time for the postulated mechanism to produce an appreciable amount of evolutionary change. For obvious reasons, structures most important for sexual selection (face, body proportions) would have evolved most, while minor details of the skeleton and teeth would have "lagged behind." Climatic selection, however, operated as well and, with regard to body proportions, its direction was exactly opposite to that of sexual selection (Jacobs 1985). This "struggle" between the two forms of selection could have resulted in contradictory combinations of traits, like those seen in Sungir (high stature, elongated distal limb segments, and enormous shoulder breadth). The head structures, which, compared to body proportions, were probably more affected by sexual selection and less influenced by climatic selection, could have evolved more strongly as rapidly.

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REFERENCES


DISCUSSION AND CONCLUSIONS

But what about Sungir people? I'm not sure, but the majority are related to Aurignacians and their descendants, to Carl, and thus to Neandertals. The central European Neandertals, just as their archaeological inventories indicate. In fact, some archaeologists have independently arrived at the same conclusion (Anikovich, this issue). As late as 1990, modern people of Sungir, then, are the final stage of the succession which begins with the Saint-Césaire Neandertal.

To reconcile this view with the maladaptive nature of the Upper Paleolithic body build in Europe, we must consider one more factor which has been almost neglected so far — sexual selection.

The scenario might be as follows. After the anatomically modern Aurignacians arrived in Europe with a culture superior to that of the local Neandertals, the replacement process began. If, in their almost hopeless struggle, the Neandertals had a faint chance of survival, their only adaptive strategy could be assimilation. One way to achieve this was to adopt the Upper Paleolithic culture (which, as we know, some of them actually did), another, to hybridize with the invaders. That hybridization did occur, is evidenced by the fact that all of the modern races, Caspianoids seem to be the least distant form the Neandertals (Roginsky 1949), and this is especially true of north-western Europeans (Coon 1939, Brace, Tracer 1992).

Under such circumstances, looking "less Neandertal" and "more Upper Paleolithic" could have been selectively advantageous, and this advantage could have resulted in a trend towards a more dolichomorphic morphology. This would mean that the transformation of archaic humans into modern ones occurred again in Europe (and possibly elsewhere) long after it had first taken place in Africa or the Near East.


