

18. The Neanderthal-*H. sapiens* interface in Eurasia

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Abstract

The general framework and the factors behind the demise of the Neanderthals are still fiercely debated, and there remain many uncertainties in the data. While accelerator dating has purged the record of spurious fossils and confirmed the ages of others, it is likely that many of our current “dates” for the last Neanderthals and the earliest moderns in Europe are minimum ages, from the perspectives of both calibration and contamination by more recent radiocarbon. While the Aurignacian probably does reflect a dispersal of modern humans, it may not represent the oldest such dispersal into Europe. And while much new morphological data support a specific distinction for *H. neanderthalensis*, nevertheless the modern and Neanderthal lineages may be better characterized as allotaxa. Regarding the factors behind Neanderthal extinction, these are likely to have been many and varied, but almost certainly included the unstable climatic context of the period between 25–40,000 years ago. Finally, taking a wider context on the Neanderthal – *sapiens* relationship, we should remember that these events in western Europe were only the endpoints of hundreds of thousands of years of possible competition and interaction between these evolving lineages.

Introduction

The fate of the Neanderthals remains one of the most fascinating topics in paleoanthropology, and the last ten years have seen the appearance of a wealth of new data relevant to the enduring

conundrum of their demise. Yet the general framework and the factors behind their disappearance are still fiercely debated, and there remain many uncertainties in the data. In this review I will examine what we have (and have not) learnt about events in Europe from some of

these new findings, and then change focus to look at the wider picture of the relationship of Neanderthals and modern humans.

CHRONOLOGY

According to current thinking, the Neanderthals disappeared about 30,000 radiocarbon years ago, after a short period of overlap and possible interaction with the *H. sapiens* of the Upper Paleolithic (in Europe = Cro-Magnons). However, one of the most serious problems is the lack of fine chronological control over the relevant time frame, and it is highly likely that many of the dates commonly quoted for last appearances (Neanderthals) and first appearances (Cro-Magnons) are underestimates of the real ages when both analytical limitations and calibration are taken into account – for example, there is growing evidence for a FAD for Cro-Magnons of at least 40,000 years (calibrated). However, the application of direct accelerator dating to the fossil record has purged it of a number of supposed Cro-Magnon fossils from sites such as Engis (Hedges et al., 1996), Vogelherd (Conard et al., 2004), Velika Pečina (Smith et al., 1999) and Hahnöfersand (Terberger et al., 2001), but has confirmed the ages of some others.

The earliest well-dated early moderns in Europe are now those from Mladeč in the Czech Republic (~32,000 radiocarbon years old: Wild et al., 2005) and Oase in Romania (~36,000 radiocarbon years: Trinkaus et al., 2003). The former fossils can be associated with Aurignacian artefacts, whereas the Oase specimens have no archaeological context, but show a suite of unusual features compared with later Europeans. These include the morphology of the inferior nasal margin, the large posterior dentition with complex cusp morphologies, the wide ascending ramus of the mandible, and the unilateral occurrence of a horizontal-oval mandibular foramen (Trinkaus et al., 2003). The latter has been interpreted as a sign of possible gene flow

from Neanderthals, but overall some of the morphologies are more reminiscent of Pleistocene (even Middle Pleistocene) African samples. Another potential early modern fossil is the Kent's Cavern 4 maxilla from England, which has a direct accelerator date of about 31,000 radiocarbon years (Stringer, 1990). However, this was one of the first fossil hominin dates produced by the Oxford Accelerator, and recent redatings of other fossils using improved pretreatments to remove contamination have often yielded older dates (Bronk Ramsey et al., 2004). These have included mammal fauna from the same levels as Kent's Cavern 4, suggesting that its real age is likely to exceed 35,000 radiocarbon years, and placing it in the time range of British leaf point industries rather than the Aurignacian. Unfortunately, it is too incomplete to allow further direct dating, but the specimen is now undergoing reanalysis in an attempt to establish its modern or Neanderthal affinities.

Now that we have finally escaped the straitjackets of Middle Paleolithic = Neanderthal and Upper Paleolithic = Cro-Magnon, we should also be open to the possibility that the Aurignacian does not mark the earliest dispersal of *H. sapiens* into Europe, not because it was not made by Cro-Magnons, as some have claimed, but because there could have been (perhaps unsuccessful) pre-Aurignacian dispersals, at least in eastern Europe. A possible example of this is the Bohunician, which appears to predate the Aurignacian and have technological links with Levantine and Nile Valley "transitional" industries, but which so far has no reliably associated fossil material (Tostevin, 2000).

The Neanderthals and their extinction

In the last few years we have seen an accumulation of data which, in my view, strongly supports the recognition of a distinct Neanderthal lineage with its own evolutionary history, one