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Journal of Archaeological Science 33 (2006) 1105–1128

Journal of Archaeological SCIENCE

http://www.elsevier.com/locate/jas

Aurignacian ethno-linguistic geography of Europe revealed by personal ornaments

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Received 7 April 2005; received in revised form 9 November 2005; accepted 28 November 2005

Abstract

Our knowledge of the migration routes of the first anatomically modern populations colonising the European territory at the beginning of the Upper Palaeolithic, of their degree of biological, linguistic, and cultural diversity, and of the nature of their contacts with local Neanderthals, is still vague. Ethnographic studies indicate that of the different components of the material culture that survive in the archaeological record, personal ornaments are among those that best reflect the ethno-linguistic diversity of human groups. The ethnic dimension of beadwork is conveyed through the use of distinct bead types as well as by particular combinations and arrangements on the body of bead types shared with one or more neighbouring groups. One would expect these variants to leave detectable traces in the archaeological record. To explore the potential of this approach, we recorded the occurrence of 157 bead types at 98 European Aurignacian sites. Seriation, correspondence, and GIS analyses of this database identify a definite cline sweeping counter-clockwise from the Northern Plains to the Eastern Alps via Western and Southern Europe through fourteen geographically cohesive sets of sites. The sets most distant from each other include Aurignacian sites from the Rhône valley, Italy, Greece and Austria on the one hand, and sites from Northern Europe, on the other. These two macro-sets do not share any bead types. Both are characterised by particular bead types and share personal ornaments with the intermediate macro-set, composed of sites from Western France, Spain, and Southern France. We argue that this pattern, which is not explained by chronological differences between sites or by differences in raw material availability, reflects the ethnolinguistic diversity of the earliest Upper Palaeolithic populations of Europe.

Keywords: Ethnicity; Linguistic diversity; Early Upper Palaeolithic; Beads; Seriation analysis; Correspondence analysis; Contour mapping; GIS

1. Introduction

In spite of the considerable effort displayed in the last decades by geneticists, palaeoanthropologists, linguists, and archaeologists, our knowledge of the degree of biological, linguistic, and cultural diversity of the first anatomically modern populations colonising the European territory at the beginning of the Upper Palaeolithic is still vague. Were these first colonisers, traditionally identified with the Aurignacian, a culturally, linguistically, and genetically homogeneous population? Did they penetrate the European territory in one wave or in successive waves, and follow a single path or multiple paths? Can any discipline determine regional trends reflecting the ethnolinguistic and genetic diversity of these populations?

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0305-4403/$ - see front matter © 2006 Elsevier Ltd. All rights reserved.
doi:10.1016/j.jas.2005.11.017

Current Europeans are African immigrants [12,38,92,169] and their gene diversity reflects demographic phenomena that occurred in Europe after 40,000 BP. The mtDNA sequences determined so far in nine Neanderthal specimens lie outside the range of variation of modern European sequences [105,108,128,150,152], suggesting that Neanderthals did not significantly contribute to the present mtDNA gene pool. However, although these results do not exclude the possibility of a genetic Neanderthal input to the gene pool of early modern colonisers that was later rubbed out by intervening bottlenecking and replacements [70], a recent modelling of potential admixture between the two populations excludes an interbreeding rate higher than 0.1% [47]. The recent genetic analysis of seven Upper Palaeolithic individuals [35,152] also seems to exclude any large genetic contribution by Neanderthals to early modern humans.

For the time being, recorded genetic differences between Neanderthals and Moderns can be used to support placing the former in either the same or different species [77,164]. Considering that there are similarities in behaviour between Neanderthals and modern humans, even if Neanderthals belonged to a different species, as suggested both by recent analysis of morphological differences among Neanderthals, modern humans, and 12 species of extant primates [81] and by differences in dental growth [135], this would not necessarily have precluded cultural [49,53,203] and perhaps biological interactions between them [177,204].

Identifying geographical patterns of genetic diversity among the early modern colonisers seems, for the moment, a largely unexplored field of population genetics, a discipline that, so far, has been more concerned with interpreting the current gene pool as a legacy of past populations' migrations. Clines in genetic markers coalescing before the Holocene have been interpreted as reflecting either successive migrations into Europe or autochthonous re-colonisations from southern refugia post-dating the Last Glacial Maximum (LGM). From a Y-chromosome perspective [37,142,151,188], the M173 lineage is considered an ancient marker that was brought by or arose in Aurignacian moderns colonising Europe about 40,000–35,000 years ago. M170 and haplogroup I would have instead originated in Europe about 22,000 years ago among Gravettian populations descendant of men who arrived from the Middle East a few thousand years earlier. A similar conclusion is reached by calculating the probable age and studying the frequency of mtDNA haplogroup H [139, 174,175]. Of more recent origin, the haplogroup V is thought by the same authors to represent the genetic marker of an Upper Magdalenian expansion from a Pyrenean refugium into southern Iberia and northern Europe some 13,000 years ago.

It is plausible, considering positive correlation between linguistic and genetic data [11,13,132,155,156], that demographic scenarios suggested by genetic markers may reflect, to some extent, language spreads and related cultural contacts. To date, however, genetic studies have not identified geographic patterns that may be representative of Palaeolithic ethno-linguistic entities.

Historical linguists, for their part, are sceptical that any language or linguistic geography from the Upper Palaeolithic could be reconstructed. Even the more convinced proponents of the Nostratic hypothesis and of a monogenetic theory for language origin [26,63,75,137,143,144] admit that they have little to contribute about the languages spoken in Europe before 12,000 years ago.

The contribution of human palaeontology to advancing the understanding of the Early Upper Palaeolithic (EUP) human geography is also limited. Although accepted for the late Aurignacian, the attribution to the moderns of the early manifestations of this culture remains tentative ([41,164,203,204], but see [117]). A number of human remains traditionally attributed to the Aurignacian have recently yielded radiocarbon dates incompatible with this attribution [45,167,171]. The 27,680 ± 270 date (Beta-157439) for a shell bead from the Cro-Magnon site [87] suggests a similar post-Aurignacian age for the type-specimen of Early Upper Palaeolithic AMH.

Amongst the five morphologically diagnostic early modern humans considered older than 28,000 years—Mladec, Rois, La Quina, Kent's Cavern, and Oase 1—only the last two are directly dated. Four come from old excavations, and the more recently discovered one, the Oase 1 mandible, lacks for the moment a cultural attribution [177]. On the basis of this evidence, it is challenging to evaluate the potential role of local Neanderthals in the morphological evolution of incoming modern populations and to identify regional trends that may reflect related cultural processes. This is the more so given the uncertainties about the biological affiliation of the authors of the other EUP cultural traditions. Widely accepted for the Chatelperronian, the only tradition associated with Neanderthal human remains [91,114], the Neanderthal authorship of EUP technocomplexes, even if plausible considering technological and geographic continuity with preceding local Mousterian industries, is still undemonstrated, and it has been proposed that some of them such as the Bachokirian or the Bohunucian may have been produced by moderns [127,165,167].

The elaboration of testable scenarios is further complicated by the limitation of radiometric dating for this time span (see [202,203] for discussion). The hypothesis that the earliest Aurignacian predated the emergence of the Chatelperronian and other EUP cultural traditions has been used to support the view that the Neanderthals and moderns lived side by side for a long time, during which the latter went through a process of gradual acculturation [17,91,104,117]. This would have triggered the adoption of a new lithic technology, ornaments, and bone tools by some Neanderthals groups. According to a recent variant of this scenario, designated the *Kulturepumpe* model, the Aurignacians would have reached the Swabian Jura precociously (ca 40,000 BP), from which they would have spread their civilisation into the remainder of Western Europe [44]. Instead, reappraisal of the radiometric and stratigraphic evidence supports the view that the earliest diagnostic occurrences of the Aurignacian are not older than ca 36,500 BP and postdate the emergence of the other EUP cultural traditions [1,202,203]. This