Decorated human skulls Oc.89+.96 and Oc.89+.97

Introduction

This report is the result of an examination of these two decorated skulls in the British Museum, together with a consideration of the *Bioarchaeological Report* by Daniel Antoine and the *Briefing note for Trustees* prepared by Natasha McKinney.

State of preservation

These two human skulls have been modified and decorated so that they are, in effect, just as much artefacts as they are human remains. The materials used for decoration cover much of the surface and are perishable, so it seems very unlikely that the skulls were ever buried after being modified. In addition, the bones of the skull are very well preserved indeed, with no residues of soil, which also suggests they have been kept above ground. No marks on the surface of the bones (for example cut marks or scratches) are visible to suggest deliberate removal of soft tissue to prepare the skulls, but holes have been cut to allow the insertion of cord. I note that, at least in the case of Oc.89+.96 ([redacted] of Nagir), the documentation provided in the *Briefing note for Trustees* suggests that the head was removed before the rest of the body was buried, but then later goes on to suggest that the skull and mandible were separated from the rest of the skeleton after the body had decomposed and then been removed from the ground. It states that the skull was straight away washed in the sea, before being decorated. After that, it was kept in a house. All this would be consistent with the excellent state of preservation of the skulls.

As these objects comprise a complex combination of very different materials, including bone, dental tissues, wax, fibres and wood, there must be quite specific conservation requirements for their conditions of storage. If they were to be repatriated and housed in a repository, this would need consideration.

Identification

Having examined the skulls myself, I agree with the conclusions of the report by Dr Antoine that the morphology of both suggests they represent young adult males. In spite of the covering of the face, I consider that the visible features are quite strongly male in form. The lack of wear on the third molars, or wisdom teeth, suggests they had only just emerged into the mouth and so provides good evidence of their young adult age. I know of no anatomical features of the skull that could unambiguously identify the skull of a Torres Strait islander, so a simple examination cannot confirm or deny that the two men originally came from the indigenous population of that region. Dr Antoine's report includes those standard measurements that can be taken from the parts of the skulls that are exposed outside the area of decoration. Skull measurements do vary between indigenous populations in different broadly defined regions of the world and this variation is well enough defined to suggest the affinities of an isolated specimen. One of the most commonly used statistical procedures to do this was developed by Professor Richard Wright, of the University of Sydney. It is made available as the computer program CRANID, for which 29 different measurements are taken of the skull and these are then compared with a

Whilst there are consistent differences, for example, between and Neanderthals and modern humans in the form of the limbs and trunk, the biggest contrast is in the skull and teeth. Within modern human fossils, the most prominent evolutionary change seems to be a reduction in size of the face, jaws and teeth. Similarly, for recent human populations representing the past few hundred years, the form of the skull shows a much more consistent pattern of geographical variation than do postcranial bones. It has recently been shown that variation in skull form, as defined by the variance of measurements for different populations, decreases with the distance of that population's home from Africa. This parallels the pattern of genetic variation in living people and makes sense in terms of a common African origin because people would have arrived progressively later in regions at a greater distance from Africa and therefore would have had less time to accumulate variation through mutation. It would be logical to compare genetic variation using DNA extracted from archaeological skeletons and teeth in human remains from sites dated to different periods during the dispersal. It has, however, proved difficult to overcome the problem of contamination by more recent DNA because this cannot be distinguished from the much more poorly preserved ancient DNA (in the case of the Neanderthals there is so much difference in the sequence that contamination can be ruled out). Laboratory technology continues to advance rapidly so it is likely that these problems will eventually be resolved.

This is the background against which the skulls need to be considered. Two skulls clearly do not allow variation to be considered but their morphology is of importance because of their rarity and where they came from. They also have potential importance for future DNA studies. Whilst the morphology could be recorded for future study from high resolution computed tomography (CT) radiographic scans, this would not preserve DNA samples. I see from the *Briefing note for Trustees* that there is also some potential for discussion about a research partnership which might allow a least some future study if they were to be repatriated.

The teeth in the Oc, 89+.96 skull show the only real evidence of any anomaly that might be examined further. This is a defect in the enamel of several tooth crowns which would have been growing at the same time during childhood. As Dr Antoine points out, a reasonable estimate for the ages at which the defects were formed is 2.5 to 3 years and again at 4.5 to 5 years. Such defects are commonly seen in archaeological dentitions and they represent a disruption to growth caused by such factors as childhood fevers. There are likely to be other, smaller defects preserved which cannot be made out with the naked eye. Dental enamel shows a regular layering which appears on the crown surface and, under the microscope, it is possible to build up a detailed sequence of growth disruptions which would be of interest. The teeth are not very worn and so should preserve this pattern of layering well. It could be recorded by cleaning the teeth and taking high resolution dental impressions, from which a plastic replica could be made for examination under the microscope. This would be entirely non-destructive.

Conclusions

These objects are, in effect, artefacts made from human remains so their scientific potential for anthropology is only part of their value. They are, however, important because of their rarity and their origin in a key part of the world for understanding the

origins of modern humans. In fact, their anthropological potential is limited by the work carried out soon after death in order to convert them into objects with a specific use, because it obscures some of the most informative parts of the skull. To realise their full anthropological potential, these skulls would need to be scanned using high resolution computed tomography radiography. From this, it would be possible with computer software to construct three-dimensional models both of their surface form underneath the wax and their internal structure. This would also provide an excellent record which could be used for future research if they did need to be repatriated and it is likely that it would be most practical to arrange for the scanning to be done in London. They also have potential for future genetics research but for this it would be necessary to take a sample of bone or, ideally, a tooth. This is clearly more problematical, not only in view of the repatriation discussion but also as a museum object under the care of a curator.

Simon Hillson, January 2012