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A Plio-Pleistocene hominid upper central incisor from the Cooper's site, South Africa

A hominid upper central incisor was recently discovered in a box of fossils from the Cooper's site, South Africa. The fossils are believed to have originated from collecting expeditions conducted either in the 1940s or early 1950s. The tooth is the second hominid fossil to be reported from this site, the first, an australopithecine third molar attributed to *Australopithecus africanus*, having been discovered and described during the late 1930s. The new specimen is described and its taxonomic affinities are assessed as being closest to either *A. africanus* or early *Homo*.

Cooper's is a little known hominid-bearing Plio-Pleistocene fossil site lying mid-way between Sterkfontein and Kromdraai. In the late 1930s, Julius Staz reported a hominid third molar from the site, along with a substantial collection of fossil fauna. The molar was described as a 'human' tooth by Middleton Shaw,^{1,2} Subsequent detailed comparison and analysis of the specimen by Broom and Schepers,³ however, led to the tooth being assigned to the species *Plesianthropus transvaalensis* (= *Australopithecus africanus*). For years, the Cooper's molar was housed in the Department of General Anatomy at the University of the Witwatersrand (P.V. Tobias, pers. comm.), but recent attempts to locate the molar have proved fruitless. Only a single plaster cast of the molar exists today and this is housed in the Department of Anatomy and Human Biology, University of the Witwatersrand. Our recent examination of the Cooper's molar cast leads us to agree that this specimen is close in morphology to third molars of *A. africanus*, thus a taxonomic assignment of *Australopithecus cf. africanus* appears appropriate.

A fairly extensive sampling of the 'Cooper's B' site was

conducted during 1954 by C.K. Brain, but no further hominid remains were discovered and, indeed, little fauna comparable to Shaw's extensive collection of material was found. The Cooper's B site is a large pit with *in situ* breccia exposed on its sides, and two sizeable dumps nearby that have breccia containing a fairly rich fauna. The lack of significant numbers of fossil baboon specimens encountered during Brain's work led him to speculate that Shaw's fauna, and possibly the hominid tooth itself were recovered from some other fossil site (Brain, pers. comm.). This led Brain⁴ to suggest that Cooper's B should not be considered an australopithecine site. The combined faunal lists of Cooper's A and Cooper's B are given in Table 1.

The most recent hominid discovery reportedly from Cooper's was made in 1989 whilst one of us (M.P.) was examining

Table 1. Combined faunal list for the Cooper's site.

Primates
<i>Cercopithecoides williamsi</i>
<i>Papio angusticeps</i>
<i>Papio robinsoni</i>
<i>Australopithecus cf. africanus</i>
<i>Homo</i> sp. indet.
Carnivora
<i>Panthera pardus</i>
Perrissodactyla
<i>Equus capensis</i>
Hyracoidea
<i>Procavia antiqua</i>
<i>Procavia transvaalensis</i>

Cooper's faunal material housed in the Transvaal Museum. The material being examined probably originated either from Shaw's or from Brain's collecting. The isolated tooth is an upper central incisor that is clearly hominid. When first examined in 1989, it was noted to be in perfect condition. When the tooth was taken from a box labelled 'Coopers A' in 1994 by M.P. and F.T., however, the tooth was found in its present damaged state, having been glued together, and accompanied by several loose fragments contained in a small vial. We have been unable to ascertain how the tooth was damaged, but surmise that it was a consequence of re-arrangements to the collection following its move to a new building. We have also been unable to identify precisely how Cooper's A and Cooper's B relate to each other. However, from conversations with both Brain and Tobias, it seems likely that Cooper's A and Cooper's B represent the same site. In addition, the tooth's *état physique* and morphology are not similar to specimens from Sterkfontein or Swartkrans, or from Kromdraai, suggesting that this specimen did indeed originate from Cooper's. Furthermore, given the rarity of early hominid central incisors, particularly those in a nearly unworn state, the tooth is worth describing as an addition to the fossil record of early hominids. A proposed renewal of work at Cooper's by us will, we hope, resolve the provenance of the two teeth and result in the recovery of *in situ* hominid specimens.

Description of the newest Cooper's hominid tooth

COA-1 is a right upper central incisor with a two-thirds complete crown and most of the root (Fig. 1). The cervical enamel margin is damaged medially and laterally but is intact near the most labial and lingual points. Wear on the occlusal surface is very slight. There is a moderate interproximal wear facet on the medial surface that resulted from contact with the left central incisor, which extends from the occlusal surface edge to nearly the mid-point of the crown edge. Labial crown height is 13.1 mm, lingual crown height is 13.3 mm. Labiolingual breadth at the cervical enamel margin is 7.5 mm, mediolateral breadth at the same point is approximately 6.6 mm. Mediobuccal breadth is not measurable. There is no lingual tubercle and only a slight, centrally positioned, lingual cervical prominence. There are very slight mesial and lingual grooves. The incisor may be described as moderately shovel-shaped, although the medial and lateral lingual margins are not significantly raised. Perikymata are clearly visible on the lingual and labial surfaces extending from the middle of the crown superiorly to the cervical enamel line. Approximately one quarter of the lingual surface of the crown in the inferolateral part of the specimen is missing, whilst almost all the lateral half of the crown on the labial surface is lost. Although some 19.0 mm of root is preserved, total root length is not determinable due to damage to its apex.

Taxonomic assessment

Taxonomic assessment of hominid central incisors is difficult even for complete specimens, and assessment of the taxonomic affinities of the COA tooth is rendered more difficult by its fragmentary nature. Nevertheless, the great height of the crown of the COA incisor seems to eliminate this specimen from *Paranthropus* / *A. robustus*. Apart from its crown height, the tooth lacks the robusticity and size, both in root and crown, of the small sample of unworn or slightly worn teeth from Sterkfontein attributed to *Australopithecus africanus*. The slight shovel shape, height of the crown and apparent breadth of the specimen indicate that this specimen could not have derived from a modern African human,

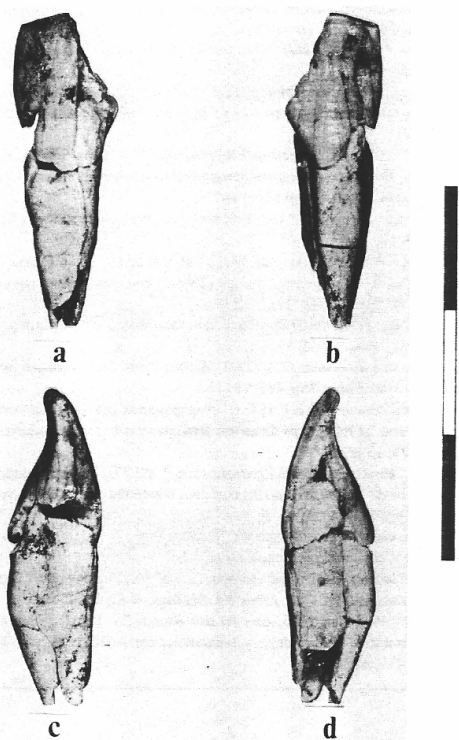


Fig. 1. Four views of the tooth. Scale in cm.

and the relatively small size of the root suggests that the maxillary area of the individual was neither very robust nor extremely prognathic. We suggest that the specimen might be attributable either to a small 'gracile' australopithecine such as *A. africanus* or to the genus *Homo*. The main interest in the specimen is that it confirms Cooper's as another early hominid site in South Africa.

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