

therapy by diminishing anti-idiotypic responses.

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The nature of Taung dental maturation continued

SIR—Mann questions¹ the emerging consensus from diverse lines of evidence that australopithecines had more ape-like dental development patterns, and thus more rapid maturation rates, than modern humans^{2,3}. He now⁴ specifically questions our interpretation of the developing dentition of the Taung skull as ape-like (as deduced from high-resolution CT scans⁵), proposing instead that some modern *Homo sapiens* have a dental pattern similar to Taung. He thus denies that apes and humans can be distinguished in terms of such dental patterns.

By way of evidence he illustrates 1 of 25 immature dentitions from the 3,000-year-old archaeological site at Hasanlu, Iran. As we assume he has chosen the best possible specimen in support of his view, it is surprising that it provides further support to our interpretation of the Taung skull. Furthermore, this specimen lacks many of the critical features needed to address the similarity of contemporary human dentitions with Taung: (1) with the exception of the left M1, not a single

permanent tooth remains of the jaw; (2) because they are all isolated teeth, their position relative to one another and to the alveolar margin is impossible to judge; and (3) the lower central incisors of this specimen may have already erupted, or these teeth may have come from more than one individual.

Even disregarding these problems, we find little credibility in the claim that this specimen mimics dental development in Taung. Mann himself recognizes this⁴ in the last two sentences of the legend to his Fig. 2. The differences he notes in upper and lower incisor-root formation and in second-molar calcification completion between the Iranian specimen and Taung are exactly those expected and predicted between ape and human-like dental patterns at this particular M1 developmental stage.

Our figures verify this point. Figure 1 shows 2-mm parasagittal CT scans of a chimpanzee, a human child, and the Taung skull, all at the same M1 dental maturation stage. Note that the permanent incisors of the chimpanzee and Taung skull are virtually identical in their horizontal alignment, their distance from the incisal alveolar margin and their total lack of root development (lower incisors also lack root development). By contrast, the permanent central incisor in the human child is vertically aligned, at or near the alveolar margin, and has a well-developed root. Figure 2 also shows clearly that the ape and Taung are virtually identical in the orientation and degree of calcification of the second molar—neither approaches the complete crown calcification of the M2 in the Iranian specimen described by Mann⁴.

Certainly, no biological anthropologist can seriously argue that dental develop-

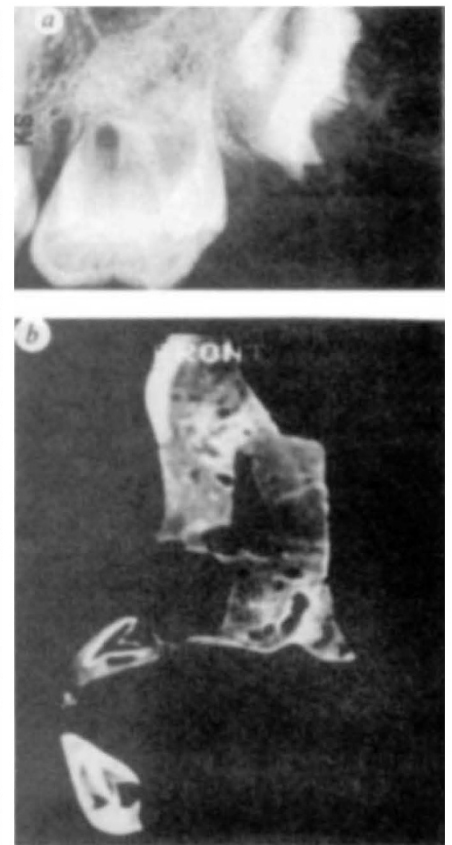


Fig. 2 a, An X-ray of the M1 and developing M2 in an orangutan at the same M1 developmental stage as the Taung skull. b, A parasagittal CT scan through the developing M2 in Taung.

ment in apes and humans proceeds along the same trajectory. That is not to say, however, that some dental stages may be equivocal in distinguishing between the two, but this is certainly not the case with the stage of first molar eruption in the Taung skull^{6,7}.

Mann⁴ concludes from his study of the Iranian sample: either “many modern humans grow in an ape-like pattern; or the patterns proposed and used . . . are incapable of distinguishing apes from humans and cannot be applied to characterize the nature of development in fossil hominid specimens”. We reject the notion that: (1) modern Iranians mimic apes in their maturation patterns; or (2) that dental development patterns are incapable of distinguishing humans from apes.

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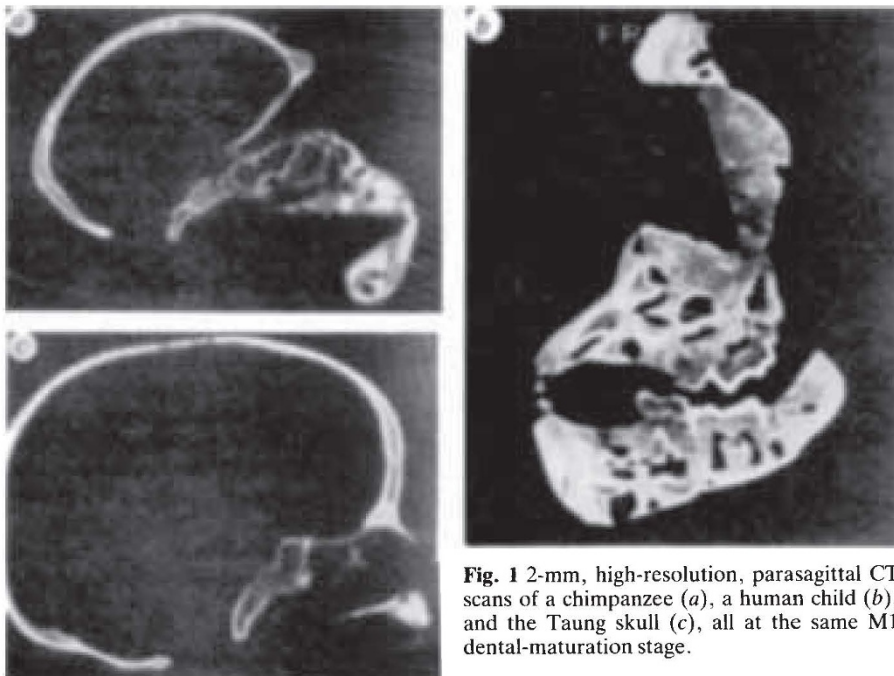


Fig. 1 2-mm, high-resolution, parasagittal CT scans of a chimpanzee (a), a human child (b), and the Taung skull (c), all at the same M1 dental-maturation stage.