

Hominid biodiversity in Southeast Asia during the Early-Middle Pleistocene: Evidence from high-resolution dental structural analyses

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Since the early discovery of *Pithecanthropus (Homo) erectus* in 1891 at Trinil, a number of Pleistocene vertebrate remains have been unearthed in the island of Java, Indonesia. The paleoanthropological record available so far includes a total of *ca.* 230 dental elements. However, while most specimens belong to *H. erectus s.s.*, some have been tentatively attributed to other hominid taxa (*e.g.*, *Meganthropus paleojavanicus*, *Pithecanthropus dubius*), or are still pending attribution (review in Smith et al., 2009). This taxonomic uncertainty probably results from the eustatic variations which have cyclically affected the Indonesian archipelago during the Quaternary, allowing the formation of temporary land-bridges and, therefore, to intermittent exchanges with the Asian mainland. In this dynamic scenario, it is likely that isolation phases have periodically shaped the local biodiversity. In order to bring new elements to the taxonomic debate on the Javanese hominid fossil record, we applied methods developed in "virtual" paleoanthropology to characterize the inner structural morphology in a largely unpublished sample of late Lower-early Middle Pleistocene dental remains from the Sangiran area (see Zanolli et al., 2011). For comparative purposes, we also integrated in our analysis extant and extinct *Pongo* teeth. To explore the structural variation shown by a human sample of comparable age from a mainland context, we have also detailed at high-resolution the teeth of the *H. heidelbergensis* African series from Tighenif, Algeria, as well as two *H. erectus/ergaster* specimens from the site of Buia, Eritrea. As a whole, the results of the comparative analyses dealing with the external morpho-dimensional features, the 2-3D dental tissue proportions, the enamel topographic distribution, the geometric morphometric assessment of the enamel-dentine junction and of the pulp chamber point to the presence at Sangiran of at least two penecontemporaneous hominid taxa (Zanolli, 2011).

References

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