
Homo ergaster and Its Contemporaries

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Abstract

On the basis of their strong morphological differences from the Javan type materials, many authorities now consider the diverse East African fossils initially classified as “African *Homo erectus*” to be more properly allocable to the species *H. ergaster*. However, while this separation at the species level of the African and Indonesian hominids is certainly justified, the species *H. ergaster* as thus constituted still embraces a significant morphological variety. Indeed, although this grouping of African fossils seems to form a fairly coherent clade, it also appears quite diverse. The East Turkana type mandible of *H. ergaster* is matched by other specimens from Kenya and Tanzania, but not by the mandible of the iconic WT 15000 skeleton, and in its turn this specimen fails to match either in its cranial construction or its upper dentition most of the other comparable specimens usually referred to *H. ergaster*. Clearly there is a need for a systematic reappraisal of the entire “African *Homo erectus*” = *Homo ergaster* group, and equally clearly the hominid evolutionary story throughout the Old

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World in the Early–Middle Pleistocene was more complex than is implied by the extension of the species *H. erectus* to cover the entire miscellaneous assemblage of hominid fossils from this time period.

Introduction

There is probably no area of paleoanthropology in which disagreement is more profound than in the systematics and taxonomy of the genus *Homo* in the Early to Middle Pleistocene. This discord has a long and, dare one say it, illustrious pedigree, dating right back to the initial discovery and description of the Javan species *Pithecanthropus* (= *Homo*) *erectus* by Eugène Dubois in the early 1890s. At that time the only extinct hominid known was the European *H. neanderthalensis*, a form that, though peculiar in morphology, possessed a brain of modern human size. The new and more ancient hominid announced by Dubois as an intermediate between modern humans and apes (a status reflected in his initial choice of name, which translates as “upright ape-man”) was thus the first known human fossil relative to display a brain cavity that was significantly larger than those of modern-day great apes while lying below the range of *H. sapiens*. Dubois’s discovery unleashed an immediate furor. The key to Dubois’s interpretation of this specimen as a human relative (though he stopped short of placing his find in the human family Hominidae) was the association of the type Trinil skullcap with a femur whose morphology was without doubt that of an upright biped in the modern fashion. This association was immediately attacked (and has continued to be periodically questioned), initially by those who preferred to see the cranium as that of a specialized ape, maybe related to the gibbons. At the same time, many of those who accepted the association between the cranium and femur wrote off the former as deriving from an aberrant modern human (see discussion in Tattersall 1995, 2008).

Still, some paleoanthropologists (Cunningham 1895) did seize immediately upon the Trinil specimen as an evolutionary intermediate between great apes and humans, and were willing to view the Javan hominid as an early member of a lineage that had given rise to *H. sapiens* via the Neanderthals. This interpretation rapidly gained ground (Theunissen 1988), and by early in the twentieth century, not least through the efforts of Schwalbe (1899) – and despite those of Boule (1911–1913) – the place of *H. erectus* as the “hominid in the middle” had effectively been secured. Given the tiny size of the hominid fossil record at that time, and that the apparent rudiments of a transformation series in brain size were present in what was known, this interpretation was hardly surprising: indeed, it was a good story that was hardly contradicted by the few facts then available. And, in the decades before the Second World War, two additional developments conspired to keep *H. erectus* at the front and center in scenarios of human evolution.

The first of these was the discovery of the huge trove of *Sinanthropus pekinensis* fossils at Zhoukoudian near Beijing during the late 1920s and the 1930s, and of the similarly impressive series of *H. soloensis* crania at Ngandong in Java in

1931–1932. The hominids from both sites were reckoned to be very close to Javan *H. erectus*, if not exactly the same thing; and at a time when most hominid fossil sites produced a specimen here and there, both discoveries were overwhelming by virtue of the sheer volume of material produced. At the same time geneticists, systematists, and paleontologists in the USA and Europe were busily constructing the outlines of what came to be known as the Evolutionary Synthesis, which saw the gradual modification of continuous lineages as the central feature of the evolutionary process (see discussion in Tattersall 1995). And at mid-century, the ornithologist Ernst Mayr (1950), one of the principal architects of the Synthesis, bluntly told the paleoanthropological profession that *S. pekinensis*, *H. soloensis*, and other Middle Pleistocene hominids all belonged to *H. erectus*, the species that occupied the middle part of a direct and gradually transforming lineage running from *H. transvaalensis* (the australopiths) at the beginning to *H. sapiens* (which embraced the Neanderthals) at the summit.

Mayr's short article was perhaps the most influential contribution ever in paleoanthropology, and effectively set its agenda for the next half-century. The rapidly increasing size of the human fossil record eventually forced even Mayr to relent, and to admit a little more complexity into the picture; but for decades, paleoanthropologists labored steadfastly under the notion that the evolutionary history of our kind had largely involved the gradual modification through time of a central lineage that eventually culminated in *H. sapiens*. Of course, it was admitted that at any one point in time such a lineage, widely distributed across the Old World, would have harbored a variety of local variants (see Baab, chapter "► Defining *Homo erectus*," Vol. 3); but throughout the second half of the twentieth century, the emphasis was principally on within-species variation, rather than on the question of whether a signal of systematic (species) diversity might be detectable in the variety of morphologies that emerged as the hominid fossil record steadily enlarged. Against this background, the category *H. erectus* became a catchall for a huge and unwieldy assortment of fossils of substantially differing morphologies.

Such hominids came from widely scattered localities. First, the probably 1.0- to 0.7-million-year (myr)-old Trinil specimens from Java were joined by a steady stream of discoveries in the nearby Sangiran Dome, not far away, that probably date in the 1.5- to 1.0-myr range, most of them closer to its younger end. Then the sample was augmented by the Chinese Peking Man fossils, now thought to be probably between about 500 and 300,000 years (kyr) old, followed by the Ngandong specimens (which may be as young as 50–30 kyr old), and ultimately by other Javanese fossils from localities such as Sambungmacan and Ngawi, both uncertainly dated but unlikely to be more than 200 kyr old, and most probably younger. In China, later finds attributed to *H. erectus* came from sites including Lantian (Gongwangling and Chenjiawo, both perhaps around 1.0 myr), Hexian (maybe 400 kyr), Nanjing (ca. 350 kyr), and even Longgupo, a site that may possibly be as much as 1.8 myr old. Some European specimens in the 400–300 kyr range, such as those from Vértesszöllös (Hungary), Arago (France), and Bilzlesleben (Germany), have been referred by some authors to *H. erectus*, as