

***Homo erectus newyorkensis*: An Indonesian Fossil Rediscovered in Manhattan Sheds Light on the Middle Phase of Human Evolution**

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Remains of human ancestors are rarer than friendly IRS agents. The paths to their discoveries are usually ones that involve years of toil in the heat and sun, or mud and rain, in distant and exotic lands. Indeed, the history of discovery of our ancestors' remains is replete with dramatic and remarkable tales of their unearthing. While some come from the caves of the Dordogne in France, the layers of East Africa's Rift Valley, or the limestone deposits of South African caves, others come from more unassuming locales—like a natural history curio shop on Columbus Avenue in Manhattan.

Good things do, on occasion, happen in New York. Such as the serendipitous realization by Mr. Henry Galiano that the calvaria he had at his shop was a bit different from others he had seen, and his foresight in bringing it to the attention of paleoanthropologists Eric Delson and Ian Tattersall at the American Museum of Natural History a few blocks away. These individuals quickly realized the importance of this skull and what it was: an early hominid probably of the group known as *Homo erectus*. The first detailed description of this fossil, now assigned the name Sambungmacan 3 (Sm 3), is provided in the following three articles in this issue of the *Anatomical Record*. *New Fossil Hominid Calvaria From Indonesia—Sambungmacan 3* by Márquez et al. (2001) recounts Sm 3's unusual travels, from its original discovery near the banks of the Solo River in Java and offers an extensive description of the calvaria's morphology. *Endocast of Sambungmacan 3 (Sm 3): A New Homo erectus From Indonesia* by Broadfield et al. (2001) analyzes an endocast of the brain of Sm 3 and compares it to those of other similar fossil hominids and modern humans. The last of the series, *Sambungmacan 3 Homo erectus Calvaria: A Comparative Morphometric and Morphological Analysis* by Delson et al. (2001) places all the observations into a comparative context and discusses the fossil's implications for understanding human evolution both in South-East Asia and in overall context.

Why is this fossil of such interest? While any shard of our past is of value, Sm 3 is likely a member of a pivotal group of poorly understood human predecessors known as *Homo erectus* (see Rightmire, 1993). Members of this species are from the "middle" period of our evolutionary history, i.e., the time after the acquisition of largely modern body structure and humanity's first departure from Africa yet well before the arrival of our own species, *Homo sapiens*, perhaps 100 to 300,000 years before the present. While no period of our evolution is clear, the middle period, often equated with the middle Pleistocene, is perhaps the murkiest. Indeed, a quarter of a century ago the late prehistorian, Glynn Isaacs, referred to this time frame as the "muddle in the middle" (1975), a characterization that is still appropriate all these years later.

There is continuing (and often heated) controversy among paleoanthropologists on just who *Homo erectus* was and where this relative fits into the path of our evolution. The first fossils of this species were discovered in Java in 1890 by Dutch physician Eugene Dubois who found a skullcap on the bank of the Solo River near Trinil. He had ventured to Java inspired by the writings of the great biologist Ernst Haeckel, who had boldly predicted in his *History of Creation* (1868) that the "missing link" in human evolution would be found in the remnants of a great, now-sunken continent of Lemuria somewhere in south Asia. Haeckel even went so far as to name this potential missing ancestor, calling it *Pithecanthropus alalus* (speechless ape-man).

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Fig. 1. Mr. Henry Galiano, owner of the natural history shop in New York City where the Sm 3 fossil was “rediscovered,” returning the specimen to Professor Teuku Jacob of the Laboratory of Bioanthropology and Paleoanthropology at the Faculty of Medicine of the Gadjah Mada University in Yogyakarta, Indonesia. Photo courtesy of Eric Delson.

Since Dubois was Dutch, and the island of Java a Dutch colony (the Dutch East Indies), he engineered for himself a position there—and shortly after his arrival undertook his true passion of fossil hunting. After Dubois’ subsequent discoveries of a skullcap and femur he named the species *Pithecanthropus erectus* (erect ape-man) and this form came to be accepted as the standard “hominid in the middle.” This acceptance was accelerated by the discovery in the 1920s of a number of similar fossils at the Zhoukoudian caves near Beijing, China (the famous “Peking Man”). Most students now refer to the Java, China, and related fossils as *Homo erectus*, the name *Pithecanthropus erectus* no longer being used (see Theunissen, 1989, for detailed history of the Dubois and the Java finds).

Homo erectus is a key group in a current major controversy in human origins: Where did modern humans arise? There are two major theories in this regard. The first, often referred to as the Multi-regional hypothesis, argues that modern humans evolved in different parts of the world from earlier, local populations (see Thorne, 2000; Wolpoff, 1999). For example, Indonesian *Homo erectus* is thought in this scenario to give rise to the living populations in Australia, while the Chinese fossils are regarded as ancestral to modern eastern Asians. The alternative theory, known as the Single

Origin hypothesis, argues that living human populations are descended from recent migrations of *Homo sapiens*, probably out of Africa, who subsequently replaced existing groups such as *Homo erectus* (see Tattersall, 1997). The authors’ findings on Sm 3 will assuredly become an important factor in this ongoing debate. Indeed, observations from these papers showing that Sm 3 exhibits a number of cranial characteristics at times intermediate between *Homo erectus* and *Homo sapiens*, or features of the endocast (such as regions possibly related to language) which appear “advanced” for *Homo erectus*, provide important data which will be incorporated into scenarios of what happened to Asian *Homo erectus* and what the behavioral abilities of this species may have been.

No topic is more complex, and potentially more volatile, than searching for clues to who we are or where we came from. Ironic that such a controversial fossil would be uncovered in the peaceful little town of old New York.

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