

Java Man: A Creature Between Apes and Humans, an Extinct Ape, or a Primitive Man?

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Abstract

The history of the Java man so-called missing link was reviewed, focusing on the fossil record controversy. Details of the Java man fossils were discussed as well as the problem of creating a species from a few bone fragments. This history illustrates the difficulty inherent in attempts to create a fossil record for human evolution. The story of Eugène Dubois and his conversion from Christian to an atheist was also related.

Keywords: Java Man, Human evolution, *Homo erectus*, missing links, Wadjak Man, Eugène Dubois, Ape ancestors, Darwin, fossil record, Scopes trial, evolution controversy

Introduction

Java Man was historically one of the most important fossil finds used to document human evolution. It was used as evidence of ape-to-human evolution for over a half century and was one of the alleged ape-like creatures produced as the prime evidence for evolution in the written testimony submitted at the Scopes Trial. The fossils were interpreted as “a creature intermediate in anatomical type between the living great apes and modern man” (Carrington 1963, 83). Many evolutionists touted it as definitive proof of human evolution, but others debated exactly what it was. Although Java Man was long regarded as a “progressive ape or primitive man” (Osborn 1938, 11) it is now widely regarded not as a link between apes and humans, but rather merely another human variation called *Homo erectus*. This review of the fossil discovery, and the facts behind it, document that this conclusion is problematic.

The Discovery

The Java Man fossil was discovered by a work crew hired by Eugène Dubois (1858–1940) in August 1891, near the village of Trinil. Trinil was a worksite located by the Bengawan River in Java, a city in modern-day Indonesia (fig. 1). Once designated *Pithecanthropus erectus* (erect ape-man), the creature now is generally classified as a *Homo erectus*, which many writers categorize as nothing more than a variant of human kind (Mehlert 1994). Others paleontologists disagree, and various other conclusions have been postulated.

The Java Man discovery was critical for evolutionists because Dubois presented it to the world as a perfect human-ape transitional link because it appeared to be evidence of a creature with traits in-between apes and humans (see fig. 2). The fossils composing Dubois’s discovery included part of a cranial (skull) cap, a left diseased femur (commonly



Fig. 1. Location of the find on the Bengawan River, near Trinil, Java. Note the conditions in this area including the wet environment, are not those that favor preservation. The ideal conditions include a very dry environment such as where most of the bones claimed to support an ape ancestry of humans. From Hrdlička 1916, 8, Plate 1.

called a thigh bone) and two (some accounts list three) teeth—the second left and third right upper jaw molars (MacCurdy 1924, 313).

Dubois made the assumption that all four fossils belonged “to one individual or species, but opinions...differ on this point”—a conclusion that many still differ with today (MacCurdy 1924, 315). Some of Dubois’s contemporaries concluded that the find was actually a human femur and an ape skull. The debate regarding the origin of the femur still has not been solved. Factors that argue it was not close to a million years old as claimed include: along with the Java Man fossils, were found the remains of many modern animals, including boars, tapirs, deer, and even porcupines (MacCurdy 1924, 314–315).

The two bones that were discovered represent less than 1% of a complete human skeleton (an average



Fig. 2. An artist attempt at the restoration of the skull. Note that it looks very much like a young chimp. See Naef 1926 in fig. 3 below for a photograph of a young chimp, and for a similar picture, see Gates 1948, 81. From Hrdlička, 1916, 11.

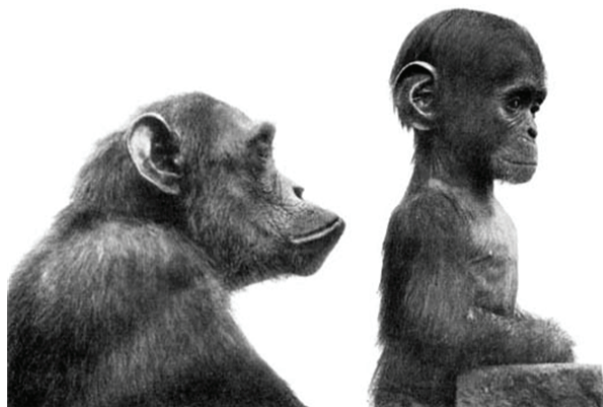


Fig. 3. Photographs of an adult and a juvenile chimpanzee. From Adolf Naef 1926. http://www.gmlburn.ca/wp-content/media/naef_fig4_baby.jpg

adult human has 206 bones). Also, an entire skeleton is only about 10% of the total mass of a human body, thus the Java bone fragments represent less than one thousandth of the entire body. Other potential Java Man “pre-humans,” were found in Java nearby modern human bones, but some debate still exists about whether they belong to the Java Man family of fossils. For example, part of a lower jaw was discovered that some classified as Java Man (MacCurdy 1924, 313).

For this, and other reasons, much debate has existed regarding the exact identity of the bones. According to Boule and Vallois, the Trinil material was “tantalizingly incomplete, and for many scientists it was inadequate as confirmation of Darwin’s view of human evolution” (Boule and Vallois 1957, 3).

This fossil find has, ironically, been largely ignored by creationists. Perloff (2001, 1–4), Harrub and Thompson (2003, 90–91), and Davidson (1995, 174–

178) mention Java Man briefly. Marvin Lubenow’s *Bones of Contention*, originally published in 1992, revised in 2004, has a mere six-page section on Java Man (2004, 92–97). One of the more complete studies in a creation journal was an article by Anonymous (*Creation Ex Nihilo*, 1991, 22–23), which was based on Stephen Jay Gould’s article on Java Man.

Why the Find Is Important

Although controversy has surrounded the find from day one, for almost a century it was widely touted as proof positive of human evolution in both textbooks and popular books (Gould 1993). Java Man also occupies an important place in the history of human evolution, partially because it was one of the earliest putative transitional ape-to-man fossils ever discovered and was considered by many to be a “missing link” between apes and humans:

We learned about him in grade school. They called him the ape-man and told us that he was our evolutionary ancestor. The drawings of that beetle-browed, jaw-jutting fellow were quite convincing. In fact, the vast majority of people who believe in human evolution were probably first sold on it by this convincing salesman. Not only is he the best-known human fossil, he is one of the only human fossils most people know. (Lubenow 2004, 86)

Java Man was even considered “one of the most important discoveries ever made in the quest for human origins” (Milner 1990, 148). The reason was because it was, its supporters claimed, “the first concrete proof that man has been subject to evolutionary change” (Boule and Vallois 1957, 2). For this reason, it was displayed prominently for many years in the American Museum of Natural History’s “Hall of the Age of Man,” along with Piltdown Man and Neanderthal Man (Osborn 1938).

Java Man Evidence Used at the Scopes Trial

The Java Man fossil discovery was also used as a major piece of evidence, along with Piltdown Man, for Darwinism in the Scopes Trial. University of Chicago anthropologist Fay-Cooper Cole provided written testimony at the trial that Darwinists had expected to find evidence in ancient rock strata of earlier human forms that more closely resembled the common ancestor of humans and apes. Cole wrote that, on the island of Java, the laborers that Dubois hired to do the work, found what they were looking for in 1891, namely “an attempt of nature” to evolve an ape into a human. Cole also wrote in his court testimony that the Java Man fossils were “in many ways intermediate between man and the anthropoids” and that the

bones were found in undisturbed strata, forty feet below the surface....These semi-human bones

consisted of a skull cap, a femur, and two molar teeth. The skull was very low with narrow receding forehead and heavy ridges of bone above the eye-sockets, while a bony ridge extended from between the eye-brows to the top of the head approaching a condition found in the cranium of the anthropoids. (Cole 1925, 236)

A newer measurement evaluation that bolstered its missing-link status was that Java Man had a cranial capacity of

between 850 and 900 cubic centimeters, or a little more than half of that of modern man. On the other hand it is half as much again as that of the adult gorilla, and the special development has taken place in these regions whose high development is typical of the brain of man. Hence in this respect this being seems to stand midway between man and the highest anthropoids.... The thigh bone is straight, indicating an upright posture and ability to run and walk, as in man.... If, as seems probable, these four bones belonged to the same individual, he must have been more man-like than any living ape and at the same time, more ape-like than any human known to us. He is known as *Pithecanthropus erectus* or the erect ape-man. (Cole 1925, 236)

A problem recognized today is that cranial size is not an accurate measure of intelligence that can be confidently used to distinguish one human being from another. Nonetheless, Shipman (2001), claimed that the find was so important that she believes Dubois should be honored as the “Father of Modern Paleoanthropology,” and has attempted to rehabilitate him in her recent book. Other scholars are not so sure.

The Discoverer—Biased from Day One

Eugène Dubois was born on January 28, 1858, about a year before Darwin published his *Origin of Species* tome in 1859, and 18 months after the first Neanderthal skeleton was unearthed in Germany. Born into a conservative Catholic Dutch family, his parents were very supportive of his education (Shipman 2001, 11). Dubois’s strong interest in science motivated his father to send him to the state technical high school with laboratories of the quality similar to a small university. Some local Catholic families objected to Eugène attending this school because they feared—correctly, as it turned out—that he would learn there “ideas as well as facts, including that new evolutionary theory” (Shipman 2001, 19). Shipman adds that the village elders were

horrified that Jean Joseph Dubois would consider sending his son to such a place. “He’ll lose his religion,” they predict, nodding their heads with conviction.... “They’ll teach him all those anti-Christian theories, and soon he’ll believe them.

He’s a nice boy, a smart boy, but the mayor will be sorry if he sends his son to such a place!” In the end, they...fuss[ed] so tiresomely that Jean Dubois decides to send Eugène to the HBS in part to defy them.

Eugène remains impeccably polite and studious, but attending the HBS only accelerates the process of his breaking free of convention. By the end of his first year at Roermond, when he is thirteen, he is starting to question the teachings of the Church.... [and] begins to doubt everything, almost reflexively. (2001, 19)

After he graduated from the school at age 19, Dubois entered medical school where he was “exposed to the exciting ideas of Darwinian biologists” (Milner 1990, 147). His Dutch Catholic upbringing openly conflicted with what he was learning about evolution in school—and evolution won out (Regal 2004, 64). Dubois lost his religion as his father’s friends had predicted and became a life-long evolutionist and opponent of Christianity.

While a student at Jena University, Dubois’s major professor was the now infamous Ernst Haeckel, an enthusiastic promoter of Darwin. Darwin predicted an evolutionary line between modern humans and their ape-like ancestors, but until the Java Man discovery, no plausible candidates were known (Bowden 1977). Ironically, Darwin had commented on this lack of transitional fossils in his *Origin of Species* book. In a chapter where he explored problems with his theory, Darwin noted, “Why, if species have descended from other species by insensibly fine gradations, do we not everywhere see innumerable transitional forms?” (Darwin 1859, 158). Darwin believed that, given enough time, these alleged missing links would be discovered. Almost 20 years later only a “scrap or two of fossil evidence for human ancestors, notably the Neanderthal skullcap from Germany,” existed (Milner 1990, 147).

Neanderthal Man, though, was far too similar to modern humans to be a convincing transition, requiring more exploration to find the prized missing link of human evolution. Even more problematic was the fact that many evolutionists determined modern humans dated back almost 100,000 years, but Neanderthal was dated only 35,000 years before the present (Mellars 1996, 402–403).

When Dubois became aware of this problem he became driven to find scientific proof for Darwinism—to find *the* “missing” link, the “*Pithecanthropus*” (Keith 1925, 438). Finding *the* missing link “would be the greatest scientific discovery ever” (Shipman 2001, 22). Dubois had a powerful motivation to find the missing link—to disprove theism because he now believed that “there is no truth in religion”—and he was drawn to prove evolution “with an almost religious fervor” (Shipman 2001, 19, 24).

Although trained as a physician and an anatomist, to find his proof, Dubois abandoned both his home and a promising career at the University of Amsterdam. To do this, he took his young wife and small children halfway around the world to search for Darwin's missing link in a remote part of Dutch East India, now called Indonesia. Many felt that his quest was based on a foolish hunch that he would find the missing link there; he had no concrete evidence that this island would produce any fruitful results.

Dubois made the decision to journey to Java based on several sources, including reading Alfred Russel Wallace's account of the orangutan, a human-like animal that lived on two islands in Sumatra (Milner 1990, 147). Ernst Haeckel's book *Theory of Asian Human Origins* also weighed heavily in Dubois's conclusion that humans first evolved on, or near, Java (Regal 2004, 65).

Haeckel was right about one thing: Java was a very good place to look for fossils. Dubois found literally hundreds of them in Java. He shipped 400 cases of the most interesting ones back to Holland, and his workers found so many bones that they sold large numbers to be ground up and sold for medical nostrums (Milner 1990, 147). The bones commonly found included various fish, reptiles, mammals (elephant, rhinoceros, hippopotamus, tapir, ruminants, monkey), and even mollusks of a type still living in the area (Boule and Vallois 1957, 113). How old these other bones were is another topic.

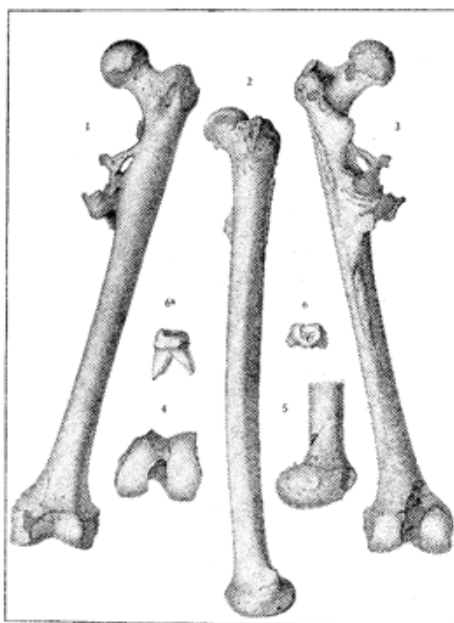


Fig. 4. The Java Man femur bone, five views, and tooth, two views. 1 from front, 2 from side, 3 from behind, 4 from below, 5 lower end from medium, 6 right third upper molar, 6a same tooth from behind. From Hrdlička 1916, 12, plate 4.



Fig. 5. The Java Man skull cap, top view. From Hrdlička 1916, page 10, plate 2.

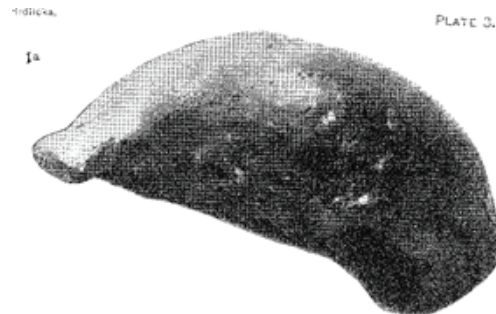


Fig. 6. The Java Man skull cap, side view. From Hrdlička 1916, page 10, plate 3.

The Discovery

It took Dubois's workers over five years to find the first part of his now famous discovery—a molar tooth that he concluded belonged to an extinct ape (see fig. 4). A month later and a yard away, a heavily fossilized skullcap was discovered by his workers (figs. 5 and 6). He eventually found another tooth and one diseased femur. Dubois concluded in his 1894 monograph that all of these bones belonged together and that they were the missing link between humans and their ape-like ancestors. However, the fossils “were not lying together, but had been scattered over a distance of about forty-five feet” or more (Cole 1925, 236).

The distance the fossils were found from each other has produced problems that have never been resolved. Cole assumed that the scattering occurred due to the “action of the ancient river which deposited them” (1925, 236). The river theory, though, is problematic because water adversely affects fossilization and bone preservation, lending doubt to the long dates claimed for the bones.

Another reason for the controversy is that Dubois did not personally find the fossils—untrained convict laborers made the discovery, creating problems for the find from the start (Gould 1993, 126). As Regal concluded, “The finds were made under circumstances that would later haunt the entire endeavor and threaten to ruin Dubois's

reputation” (2004, 66). Another major problem was that extensive excavation of the area of his original find turned up no clear evidence of any additional Java Man fossils.

Adding to these problems was the fact that, although a skilled anatomist, Dubois had no fossil experience or training. His hero, Haeckel, was himself “not particularly enamored of fossils, insisting that a good naturalist could infer biological relations without them” (Regal 2004, 64–65). Nonetheless, Haeckel concluded that the Java Man bones belonged “to a creature which seemed admirably suited for the role of the ‘missing link’” (Carrington 1963, 84). In spite of all the major problems with his find, Dubois naively thought that he had, at last, proved the evolution of humans.

Dubois Returns to Europe

Dubois returned to Europe believing that he had proven human evolution by finding *the* critical missing link required to prove ape-to-human evolution. His find, though, with good reason, generated controversy from the very beginning (Shipman 2001). Dubois had supporters, but he also “generated a firestorm of doubt and protest in this perennially contentious field” of human evolution (Gould 1993, 127). The outcry against his claims was so great that some surmised, “in anger as a desperate rearguard defense against a growing and withering attack,” Dubois locked the bones in a safe (accounts differ—some claim he actually buried them under his own house) for almost 25 years (Gould 1990, 14)! Theunissen (1989) concluded that Dubois locked up his bones, not as a desperate defense against critics, but because he was suspicious of others to the point of paranoia.

While their importance was settled in Dubois mind, the fossils “embroiled their discoverer in bitter controversies for the rest of his life” (Milner 1990, 147). His colleagues had good reasons to be skeptical, and many critics remain very skeptical, even today. Rather than proving human evolution, the Java Man fossils simply demonstrated the enormous variety of human morphology. A further problem is that, despite “intensive research efforts throughout Indonesia, only Java has yielded fossils of [putative] early hominids” and further digging attempts at the “stratigraphic levels that yielded the original Dubois finds...[in] an attempt to recover more *Pithecanthropus* fossils...greatly augmented the number of fossil mammals but failed to recover any new hominid material.” (Spencer 1997, 544) If the Java Man fossils were a legitimate missing link, one would expect to find additional—or even innumerable—fossils, as Darwin suggested we should expect to find.

Part of the problem was Dubois’s dogmatic attitude about his conclusions. He was wedded to his conclusions to the degree that he

dismissed later similar finds made outside Peking, China, in the 1920s and ‘30s. Oddly, when more *Pithecanthropus* material was unearthed along the Solo River in 1936, Dubois dismissed it too. Anthropologist Ralph Von Koenigswald found most of a young skullcap of what he called *Pithecanthropus* II (also known as Mojokerto child). Dubois went so far as to accuse Von Koenigswald of either faking the skull or poorly reconstructing it. What is so strange about Dubois is that where others fought to have their finds included in the human family line, he fought to keep his out. (Regal 2004, 67)

Evolutionist Stephen Jay Gould concluded that Dubois’s arguments in support of his find were “weakly constructed,” and he was “willfully blind to opposing evidence” (1993, 136). In spite of his dogmatic attitude, and possibly due to it, from

the early 1900s to the early 1920s Dubois remained silent on the issue of his finds. However, when he did finally resume consideration of these finds in the 1920s and 1930s, his views underwent considerable change—ultimately concluding that *Pithecanthropus* was an extinct hylobatid ape. (Spencer 1997, 545)

Based on his detailed cranial research work, Dubois eventually argued that his find was not even a human ancestor, but rather the classification above species, namely genus, allied to the gibbon family (Dubois 1937, 6–7)! In his review he provides numerous examples of the evidence that he believed supported his new conclusion. This new conclusion reveals the major difficulty of drawing conclusions from a few bone fragments that have been distorted by the fossilization process. Gould concluded that Dubois’s new theory of Java was not designed to “demote the greatest discovery of his life,” but rather to exalt it (Gould 1990, 22).

Others argued that Dubois had, in fact, backed down from his original claim in the face of his own scientific research. After thoroughly reviewing his new conclusion, it appears he genuinely felt that his gibbon-like conclusions were correct and he had amassed a fair amount of evidence to support it. Dubois died on December 16, 1940, at age 82, alone, bitter, and an angry man (Regal 2004, 67).

The Teeth and Jaw Fragment

The Java Man premolar is morphologically very close to modern human teeth but smaller and “not unlike a human lower premolar” (MacCurdy 1935, 19). The root tip is bifurcated, a trait sometimes found in modern humans. Furthermore, in contrast to apes which the buccal and lingual branches are

located obliquely, the buccal and lingual branches in modern humans are located directly opposite of each other (MacCurdy 1935, 19). The second left-lower premolar tooth is considered by some to be too small to belong with the other molars (MacCurdy 1924, 314).

A third tooth, a third right molar, was found 40km (25mi) away, and is no longer considered to belong to Java Man (MacCurdy 1924, 319). Based on the teeth, MacCurdy argued that the creature was not a human precursor, but simply a different variation of *Hominadae* (1924, 316). In addition, a jaw fragment was found by von Koenigswald in 1936 in the same layer as the skullcap, but also 40km away. For this and other reasons, the jaw fragment is usually not regarded as likely belonging to the Trinil Java-Man type (MacCurdy 1924, 319).

The Femur

Controversy also swirls around the femur. One major concern is that it was not found until several months later and at about 50ft from the skullcap. This considerable distance suggests that the skull cap and femur may not belong together or, at the least, makes it difficult to draw this conclusion. Most scientists now conclude that the femur is from a modern human because it “could scarcely be distinguished from our own” (Gould 1993, 126). The femur also has a pathologic lesion of unknown origin near the small trochanter. Assuming the very unlikely conclusion that they belong together, the femur length indicates that the height of Java Man was close to the average male today—from 5ft to as much as 5ft 8in inches tall (Boule and Vallois 1957, 122; Gould 1990, 23).

The femur would also indicate that Java Man walked fully erect, and not like a quadruped or even an intermediate between an ape and human, thus the modern classification for Java Man, *Homo erectus*. Biped locomotion requires muscle attachments and a ball joint that sits directly over the inside of the knee vs. quadruped locomotion. One current estimate puts the average *Homo erectus* male at around 138lb and 6ft tall, and the average *Homo erectus* female at about 117lb and 5ft 3in tall, supporting the *Homo erectus* classification (Swisher, Curtis, and Lewin 2000, 159).

The Skullcap Fragment

The skullcap fragment, which possessed the appearance of a turtle shell, was found about 3ft away from the first tooth. The skullcap was partially encased in a solid rock matrix, requiring its careful removal. The front part of the skull had a retreating, sloping forehead and large brow ridges like a Neanderthal (Lubenow 2004). Since only one

skullcap clearly identified as the Java-Man type was found at this location, we have no way of knowing how typical the skull is of the putative Java-Man type.

A major issue in determining the identity of Java Man was the cranial capacity of the skull—a task made difficult because only the top part of the skull was recovered. The most well-known picture of the skull cap indicates a small skull and prominent brow ridges, but other pictures, especially a profile, indicate a very different skull shape (see Tattersall and Schwartz 2000, 150). The cranial capacity of Java Man was first estimated to be 850cc, and then reestimated at around 960cc, or two-thirds that of a modern human adult and somewhat small for a *Homo erectus* skull (Gould 1990, 14).

Both estimates place the Java Man skull capacity at a level much larger than that of an adult male gorilla, which is 550cc, but smaller than that of a modern adult human, about 1350–1400cc (Gibbons 2003a, 1641). *Homo erectus* skulls average over 1,000cc—about 75% of the skull volume of average humans today, but almost twice that of an ape (Stringer and Andrews 2005, 138). This value must be adjusted for the average size of *Homo erectus*. *Homo erectus* females probably were shorter than modern human females. If the level of scientific analysis that was completed on the Piltdown Man could also be done on Java Man bones, especially the skull cap, its identity might be more confidently determined.

A major trait of the skullcap was the prominent brow ridges. Louis Leakey and others have regarded brow ridges as specialized traits rather than primitive ones. Prominent brow ridges are also commonly seen in native Australians and a few African and Caucasian populations. It largely reflected frontal sinus size, not cranial capacity (Soderstrom 2003, 342). The distinct skull brow ridges typical of the Neanderthal type and *H. sapiens idaltu* are also very similar to Java Man. Furthermore, brow ridge size is not consistently reflected in the face morphology of living subjects (Soderstrom 2003, 341).

Do the Fossils Belong Together?

Given how far apart from each other they were found, the question is whether the Dubois fossil fragments belong together. The river theory, as noted above, is still controversial. Additionally, it is well-known for animals, such as wild dogs and large cats, to chew on bones seeking marrow, carrying them to different locations away from where the animal died. These different fossils could have been brought to this location by an animal or pack of animals. McCabe deals with the problem by concluding “it is immaterial whether or not these bones belong to the same individual. If they do not, we have remains of

two or three individuals of the same intermediate species" (1912, 272). Nevertheless, the difficulty in ascribing the bones to one body results in all restoration attempts being "pure flights of fancy" (Boule and Vallois 1957, 123).

If Java Man was complete and unequivocally morphologically intermediate between humans and some apes, this would support, but not *prove*, that humans descended from ape-like ancestors. Boule and Vallois note

that resemblance does not always imply descent. Even if, in the sum of his known characters (poor at the best), *Pithecanthropus* actually forms a structural link between the Great Apes and Man, it does not necessarily follow that he must be regarded as a genealogical link; and this distinction is not, as has been asserted, merely a question of words. (1957, 125)

One other possibility, rarely considered, is that Java Man, at least the skull top, was from a female, or even a youngster, or a short adult. Much depends on whether the femur belongs to the skullcap because, for the cranial estimates to have meaning, comparisons must control for height: for example, if he was a short modern male, on average his brain size would be about 1450cc, or slightly *above* the modern human average (Gibbons 2003a, 1641).

Almost 30 years after the original discovery, Dubois revealed for the first time that "there were four more fossil bones from the area where his *erectus* material had been discovered" (Brace and Montague 1977, 204). The ape-man link found by Dubois's team near the Java bones was called Wadjak I skull and had a cranial capacity of 1550cc, (Dubois concluded that it was a modern female). Another skull, Wadjak II, likely a male, had a cranial capacity estimated at 1650cc (Keith 1925, 441).

These findings all create serious questions about the validity of Java Man. It is possible that the very human femur belonged to the Wadjak tribe type. Keith concluded that these fossils were an offshoot of the Australian and Negro types (Keith 1925, 446). Brace and Montagu concluded that they "looked more like Australian aborigines than modern Indonesians" (1977, 203–204). Others argued that the Wadjak skulls were examples of Java Man, both because of their morphological similarity and their close physical proximity to Java Man.

A major question is, although the Wadjak bones (skull and jaw fragments) were evidently discovered by Dubois in 1890, why were they hidden away and inaccessible to other researchers for 26 years after his return from Java (Keith 1925, 438, 440)? Were these skull and other fragments far too human and likely to cause serious doubt about Java Man's status as a missing link between humans and apes? Did Dubois recognize problems with these fossils and

purposefully keep them away from other scientists? Dubois carried the answers to these questions to his grave. The reason may be that if the

aborigines of Australia have sprung from the Wadjak type, as Dr. Dubois is inclined to suppose, then evolution has taken a retrograde course, for the average cranial capacity of the male Australian is 1287c.c.—300c.c. less than in the Pleistocene people of Java. (Keith 1925, 443–444)

The Java Man skullcap also lacked any evidence of the sagittal crest possessed by the largest anthropoid apes, the orang and the gorilla, and the skull convolutions seem to be "of the human type" (Boule and Vallois 1957, 116, 119). As of 2003, a total of 23 skulls, teeth and bones from 100 or more *H. erectus*-like individuals have been uncovered in Java. A study of these has supported the conclusion of some that Java Man was simply a human variant.

Harvard paleoanthropologist Dan Lieberman concluded from a study of a skull discovered in 2001 that was more complete than Java Man (*Homo erectus calvarium*) was "an important find because it is the first *H. erectus* find with a reasonably complete cranial base, and it looks modern" (quoted in Gibbons 2003b). A micro-computerized tomography analysis of the 2001 discovery, and its modern looking traits, have added to "the ongoing controversy surrounding the origin of modern humans" (Baba et al. 2003, 1387).

Dating Problems

Dubois needed a date that would put his find in the time period of history that he believed apes evolved into humans. He concluded that they lived in the Pliocene Epoch 7 to 10 million years ago. Other researchers, such as Jean, Harrah, and Herman (1952, 459) place Java Man at about 500,000 to 700,000 years ago. Supporters of Dubois and his dating confidently assert that the skull, teeth, and left femur have "been definitely established as of Middle Pleistocene age" (Rogers, Hubbell, and Byers 1942, 416–417).

Judging by the associated fauna and flora, some experts placed Java Man at the Lower Quaternary instead of the Upper Tertiary (MacCurdy 1924, 314). Milner notes that the find is now dated from 250,000 to half a million years old, a window so large that it limits the find's usefulness as a potential transitional form (Milner 1990, 148).

In spite of these date assertions, producing a valid date for Java Man is very difficult because the major source of information about the fossils is based on fragments that, in turn, were based on their location in the rock stratum in which they were discovered, and exactly where the bones were found is disputed. Circular reasoning is problematic in that fossils are

dated by the layer they were found in and then, in turn, date the layer by the fossils found in them. Furthermore, the different fossils that Dubois's workers found are likely of different dates.

A major problem is the bones were found in a moist environment, and within a few years or so bone is rapidly damaged in such an environment. Deterioration of fossils is caused by water, weather, and temperature. Bone mineral crystals tend to be long and narrow and, as a result, the needle-shaped splinters that form from water trapped in the pore spaces that exist in all bone causes these pores to widen. As they widen, even more water is allowed to enter, forming yet larger crystals (Calcagno 1989). The major causes of deterioration of animal body parts, including bone, that were all potential problems with Java Man include

1. drying and wetting (very important in all semi-arid, arid, and temperate areas, or in humid areas with monsoonal climates),
2. formation of salt crystals during drying (and the analogous formation of ice crystals during freezing), and
3. freezing and thawing (an important process, especially at high altitudes or for short periods of time) (Martill 1998).

The Indonesian climate is almost entirely tropical and typical of a rainforest. The area's relative humidity ranges between 70 and 90%, very poor conditions to preserve fossils, unlike the Hell Creek formation in Montana. The ideal preservation conditions include a very dry desert with rare rainfall, the opposite of Java, Indonesia. These facts call Dubois's conclusion even more into question.

Opinions on Java Man Today

Java Man is now classified by most experts as *Homo erectus* and not a "missing link" between man and apes. Lubenow also concluded that Java Man, at least the skullcap, is not a missing link, but rather a true human of the Neanderthal type (2004, 87; see also Gish 1995, 280–285). Milner concurred, noting that Java Man is "considered an early human species, not a 'missing link' between ape and man...Dubois spent most of his life trying to press a wrong conclusion" (1990, 148). It was concluded as early as the middle 1900s that Java man was probably in the genus *Homo*. Swisher, Curtis, and Lewin conclude that *Homo erectus* was not apelike and "every human species that followed *erectus* was distinctly human" (2000, 131). They add that "*Homo erectus* was the first human species with a large brain, a large human-shaped (as opposed to ape-shaped) body, and long lower limbs (2000, 131). One history of the status of Java Man notes that Dubois's fossils originally were

named *Pithecanthropus erectus*, meaning "erect ape-man." For years a controversy as to whether the creature was ape or man raged around these meager fossils. Fortunately he and his fellows are now known from portions of four skulls and some additional bones. One individual, because of large size and massive structure of the teeth and jaws, has been given the name *Pithecanthropus robustus*, which seems to indicate that he belonged to a different *species* from his smaller compatriots....It seems unlikely that the Java men really belonged to separate species or that they should be placed in a separate genus (*Pithecanthropus*) from ourselves (*Homo*). (Moody 1953, 214–215)

From these contradictions one researcher concluded

The *Homo erectus* type appears to be one of many varieties of humans that have existed historically and still exist today. When all of the early and late *Homo erectus* fossils are measured, there are, in fact, few unequivocal indicators of significant differences between *H. erectus* and *H. sapiens*. (Tattersall, Delson, and Van Couvering 1988)

Judging by the drawings of the skull, Johanson and Edey show Java Man skull to be very close to Neanderthals (1981, 33). An American Museum of Natural History publication wrote that disagreements about Java Man:

were plentiful. Some said the skull was that of an idiot, others that it was normal. Some said it was human, others that it was a monkey, a chimpanzee, or a gibbon. The Java Man could speak. The Java Man could not speak. Dubois seems to have had his fill of this, for after a while he retired from the fray, and he took *Pithecanthropus* with him and locked him up in his house for twenty years. (Howells 1947, 135)

As late as 1935 only one voice was still "claiming that *Pithecanthropus* was not a man at all, but a very large kind of gibbon-like hominid. Sadly, the voice was that of the aged Dubois" (Milner 1990, 148). Dubois "fought doggedly throughout the rest of his life to maintain that *Pithecanthropus* was not early man but a giant man-like *ape*" (Boule and Vallois 1957, 3).

The one thing that almost all researchers agree on today is that Java Man was *not* a link between modern humans and apes.

Java Man Major Evidence of Evolution for Decades

Given the controversy and questions swirling around this discovery, one would think that it would be approached with intellectual caution. However, the enormous controversy documented above did not stop Darwin supporters from touting Java Man

as impeccable proof of human evolution. In spite of the controversy, Java Man was featured in both textbooks and popular books, often uncritically, as a major evidence of human evolution for several decades. As early as 1912 McCabe claimed the following about Java Man:

Fortunately, although these patriarchal bones are very scanty—two teeth, a thigh-bone, and the skull-cap—we are now in a position to form some idea of the nature of their living owner. They have been subjected to so searching a scrutiny and discussion since they were found in Java in 1891 and 1892 that there is now a general agreement as to their nature. At first some of the experts thought that they were the remains of an abnormally low man, and others that they belonged to an abnormally high ape. The majority held from the start that they belonged to a member of a race almost midway between the highest family of apes and the lowest known tribe of men, and therefore fully merited the name of “Ape-Man” (*Pithecanthropus*). This is now the general view of anthropologists. The Ape-Man of Java was in every respect entitled to that name. (McCabe 1912, 271)

As late as 1945, Java Man was viewed as the precursor of Solo Man, who is postulated to have evolved into the Australian Aborigines (Andrews 1945, endpaper). Typical of the uncritical and irresponsible claims about Java Man was the leading biology text by Gruenberg that showed, both in its 1919 and 1924 editions, a frontal and side-view drawing of an ape-man purported to be Java Man that was presented as a documented human ancestor (Gruenberg 1919, 493; 1924, 493). He writes that the bones of Java Man found by Professor Dubois have proven that those who accept evolution of plants and animals but “hesitated to accept the same explanation for the appearance of man upon earth” are wrong because the Java fossils are a “very satisfactory...missing link” between ape animals and modern man (Gruenberg 1919, 494. See fig. 7). Lastly, Gruenberg includes a picture of the progression from ape-man to modern man, which includes Java Man, Neanderthal Man, and finally, Cro-Magnon Man (Gruenberg 1919, 494). He gives no indication of the major problems with the find documented above.

Professor Winchester, in a text that went through two editions and 14 re-printings under the subheading “Earliest Human Remains,” wrote that the Java Man find involved “three teeth, the top of a skull and a thigh bone” and never indicated in his discussion any concerns about the validity of the fossils (Winchester 1962, 851). Jean, Harrah, and Herman also assumed that all four of the Dubois’s fossils belong together, writing in 1952 that his “teeth are of human type, the straightness of the thigh bone indicate that its possessor walked almost as erect as present man”

but admits that the “skull has been the center of much discussion and controversy” (1952, 458). In fact, the controversy involved mostly the teeth and the leg bones, not the skullcap.

Rogers, Hubbell, and Byers in a leading biology textbook gave a detailed discription of Java Man, writing that he was “5 feet 6 inches in height. He was of stocky build, and though he stood erect, he was bull-necked, with outthrust head...an extraordinarily ugly, brutish creature...[and there] is no telling whether he could speak, and no direct proof that he could use tools” (1952, 495–496). This is a good example of conclusions about Java Man going far beyond the evidence.

John Bradley in his book *Parade of the Living*, concluded from this confusion that, regardless of which theory about Java Man is correct, whatever “the truth may be, whether he was our granduncle or our grandfather, or just an exalted ape, the Java ape-man breaks down the barrier between ape and man. He is just the sort of creature that should have

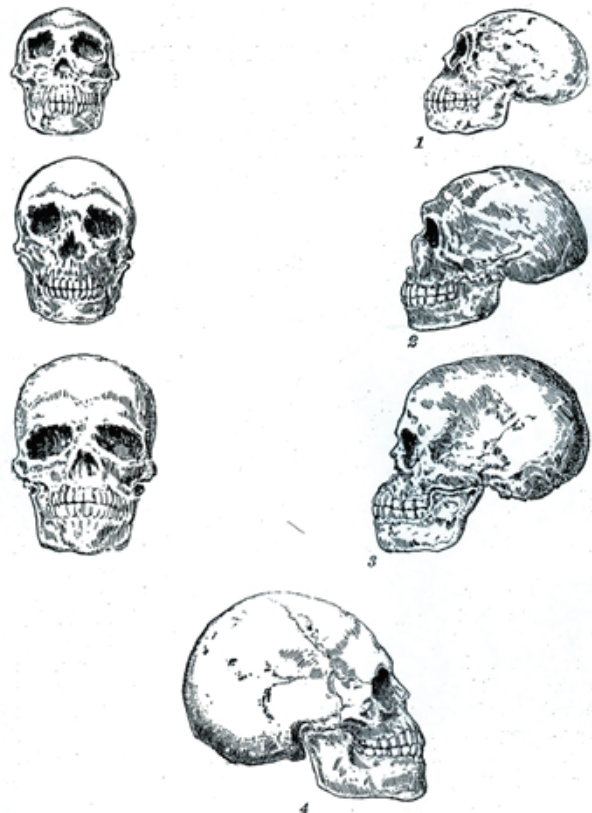


Fig. 7. An early picture of the now disproven progression from apes to man. 1. shows “Java Man,” 2. Neanderthal man, 3. “Negroid man, blacks,” 4. “Nebraska Man.” The caption gives the brain size of *Pithecanthropus* as 850 cc, Piltown as 1300 cc, Neanderthal as 1600 cc, and modern man as 1,500–1,800 cc. Piltown Man has been proven to be a hoax, Neanderthal man and “Negroes” both fully modern. The illustration is from Gruenberg 1924, page 493. As the book is in public domain because it is over 70 years old.

existed if ape and man share a common ancestor” (1930, 220).

Some early textbooks, while touting Java Man as “half a million years old...which possess[es] many of the attributes of ‘missing links’” briefly indicate some problems, such as noting that the “famous find” actually consists merely of a skull-cap, since the associated bones proved to be unrelated (Woodruff 1948, 608–609). Woodruff also wrote that “the much vaunted Java man has become overshadowed by newer discoveries” and then lists Peking Man, Piltdown Man, Heidelberg Man, Neanderthal Man, and, lastly, Cro-Magnon Man (Woodruff 1948, 608–614).

One of the most honest discussions in a popular textbook is by Rogers, Hubbell, and Byers who stated that Java Man is

without doubt the most famous of all fossils, for they seemed to bridge the gap between man and the higher apes in a most remarkable fashion. They have been intensively studied, and thousands of pages have been written about them. Some students thought that *Pithecanthropus* was a very primitive and apelike man, others that he was a very advanced and manlike ape, and prolonged controversies raged over his status (1942, 417).

Obviously, most of the statements in the other textbooks cited above need to be examined in light of the following survey that was taken before these textbooks were published. The survey recorded the conclusions of 19 scientists who studied Java-Man fossils, and “found that five of them judged the remains to be those of an ape; seven judged them to be human; and seven, including Dr. Dubois himself, considered them to be intermediate between the ape and man—a sort of ‘missing link’” (Jean, Harrah, and Herman 1952, 458). As noted above, in the end

Dr. Dubois, after a careful restudy of the whole problem in the spring of 1937, came to the conclusion that *Pithecanthropus* was probably not a man but an ape—a superior sort of gibbon that lived in trees and, although it had a larger brain, neither talked nor thought man-fashion. Dr. Aleš Hrdlička, the late great American anthropologist, on the basis of his study in 1932, believed that we cannot assert that *Pithecanthropus* was a form of early man or a type that eventually evolved into man. He thought that the most we could say from the evidence then available was that this creature was a high primate “of as yet uncertain ancestry and no known progeny,” but far advanced “in what may be termed the humanoid direction.” On the other hand, Dr. Koenigswald of Bandoeng, Java, who found some of the new skulls of *Pithecanthropus*, decided after a careful study of the skulls in 1937 that the Java man is definitely human and perhaps the earliest man that ever walked the earth. (Jean, Harrah and Herman 1952, 459)

In view of this information, it is clear that the numerous claims, solemnly cited as fact in the textbooks above, that Java Man was a link between men and apes, a so-called “missing link,” are unwarranted. Fortunately, Java Man is today almost always ignored in textbooks and reference books on human evolution. If covered at all, is mentioned only briefly, often with no hint of the many major problems with the find. For example, Professor Stanley Rice wrote that “Java man was the first human fossil to be found outside of Europe, and the first fossil that could be interpreted as being more primitive than modern humans” (2007, 188). He added that Dubois found a skullcap and a thighbone, implying that they were both proven to be *Homo erectus*. In another article he added more details, noting that the femur indicated Java Man walked upright (Rice 2007, 138).

Rice does add that Dubois “began to doubt that the specimens were really intermediates between apes and human. The more he studied the Southeast gibbon, the more he came to believe that Java man was just a large gibbon” (Rice, 2007, 138). Adding this part about a large gibbon is unusual today, and may stem from the fact that Rice was a former active creationist professor who became an evolutionist, and some of what he learned as a creationist may have stuck with him.

Tattersall, Delson, and Van Couvering state, under the subtopic “First Discoveries in Asia,” only that Dubois found a skullcap and “a remarkably complete and modern looking femur,” implying that they were both part of Java Man (1988, 260). Professor Strickberger mentioned only that “hominid fossils found near the Solo River in Java, dated to less than 250,000 years ago, show brain volumes averaging 1100 to 1200cc.” (2000, 479). Notice how very different values are given in the literature for both the reported age and brain size. More typical today is to totally ignore Java Man, such as is done by the leading textbook on evolution by Mark Ridley (1996).

Conclusions

Java Man was touted as major evidence of human evolution for decades, a conclusion that, at best, was based on very questionable evidence. Reasons for questioning the validity of Java Man include

- * The difficulty of reconstructing the creature based on only a few bone fragments,
- * The uncertain conditions surrounding its find,
- * The major dating and preservation problems,
- * The problems with the conclusion that all of the bones identified as Java Man were, in fact, part of the same individual.

All of these problems, and more, were noted in the literature, but were rarely acknowledged in the over two dozen textbooks intended for high school and college students that were surveyed for this chapter.

Although Java Man is now widely classified as a *Homo erectus*, and not a missing link between humans and our putative ape-like ancestors, it is difficult to come to any firm conclusion about its identity (Gibbons 2003b, 2006; Parker 2005). The fact that its identification has been so problematic is why its classification has included a Neanderthal, a creature like or related to a gibbon, an extinct giant ape, a primitive man, and finally a *Homo erectus*. The motivation of its discoverer to find the missing link, and the motivations of Darwinists to prove evolution from an apelike common ancestor, all played a part in the leading role that Java Man had in “proving” human evolution. In short, the evidence is far too problematic to come to any valid conclusion about who Java Man was.

The Java Man case history is only one of many examples of fragmentary evidence and controversy in paleoanthropology that has been touted by leading scientists as “convincing evidence” of human evolution from some apelike common ancestor. The fact is that “Most hominid fossils, even though they serve as a basis for endless speculation and elaborate storytelling, are fragments of jaws and scraps of skulls” (Gould 1980, 126). And, as Ann Gibbons concluded, “Starting with Dutch anatomist Eugène Dubois’s discovery of Java man in Indonesia in 1891, many fossils have been proposed as the missing link, only to be bumped from that spot when an even older and more primitive fossil was found” (Gibbons 2006, 6). When attempting to prove ape to human evolution it should be noted that we have little convincing evidence for chimp evolution. Achenbach claims the reason for the lack of evidence for chimp evolution is the “fossil record is hampered by the fact that bones don’t fossilize everywhere. We have essentially no fossils, for example, of chimpanzees, because they live in rain forests, where bones decompose rapidly” (Achenbach 2005, 1).

Acknowledgements

I wish to thank Marvin Lubenow, Ph.D., Clifford Lillo, M.A., Jody Allen, RN, Wayne Frair, Ph.D., Mary Ann Stuart, M.A, and John UpChurch for their review of earlier drafts of this paper.

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