

Fraud and Forgery in Paleoanthropology

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Abstract

A review of the history of paleoanthropology leads to the conclusion that the discipline is far less objective than that for physics, chemistry, or even biology. The field is rife with controversy and fraud, including outright faking. Classic examples include Piltdown man and *Hesperopithecus* but many other less well-known examples exist that are reviewed in this paper. Several well-documented examples are cited in some detail to illustrate the types of problems encountered, and the results of fraud in paleoanthropology.

Keywords: paleoanthropology, science fraud, evolution of humans, Piltdown man, hobbits, *Homo floresiensis*, scientific bias, human fossils, science corruption.

Introduction

Extensive historical research has documented the fact that the so-called objective field of human evolution is highly subjective—and bias, fraud and even forgery are all common (Judson 2004). The best known examples include Piltdown man, which has been proven to be a composite of a human skull and an ape jaw (Bergman 2003) and *Hesperopithecus* man, which turned out to be a pig's tooth (Bergman 2006), but many other major examples exist.

The scientists involved in these controversies are often not minor-league players, but include many of those who have dominated the field of paleoanthropology in the twentieth century. The effects of their fraud can be far reaching and may affect entire disciplines (Feder 2006; Kohn 1988). Even well-known modern paleoanthropology leaders, including the Leakey family (Louis, Mary, and Richard), have been involved in much controversy including accusations of misrepresentation, sloppy work, and poor documentation.

Paleoanthropology is especially a contentious field for reasons including the strong human interest in our origins, and

because conclusions of emotional significance ... must be drawn from extremely paltry evidence, it is often difficult to separate the personal from the scientific in disputes raging within the field (Holden 1981, p. 738).

Fix noted that one critical reason for the conflicts is that the human fossil record is still so sparse

that those who insist on positive declarations can do nothing more than jump from one hazardous surmise to another and hope that the next dramatic discovery does not make them utter fools ... Clearly, some people refuse to learn from this. As we have seen, there are numerous scientists and popularizers today who have the temerity to tell us that there is 'no doubt' how

man originated. If only they had the evidence (Fix 1984, p. 150).

A major reason for the numerous controversies in paleoanthropology is that

paleoanthropology is a field in which the students far outnumber the objects of study. There are lively—and sometimes acrimonious—debates about whether a given fossil is really something new, or merely a variant of an already named species. These arguments about scientific names often mean very little. Whether a humanlike fossil is named as one species or another can turn on matters as small as half a millimeter in the diameter of a tooth, or slight differences in the shape of the thighbone. The problem is that there are simply too few specimens, spread out over too large a geographic area, to make these decisions with any confidence. New finds and revisions of old conclusions occur constantly (Coyne 2009, p. 197).

Another reason for the many controversies and forgery allegations is that the anthropological field is divided into “camps,” “schools,” or cliques that are not uncommonly at war with each other. Each school is often dominated by a small number of scientists who are charismatic leaders. Each camp tries to “prove” its own evolution theory, often dogmatically, by using fossils, most of which consist of badly damaged fragments. In the words of Gee, the problem is the “Fossil evidence of human evolutionary history is fragmentary and open to various interpretations” (Gee 2001).

Sides are taken in these conflicts and, as Morell (1995) eloquently demonstrates, the participants sometimes end up in altercations not unlike those fought between nations—whereas unethical behavior (and almost everything else) is fair game. Only physical aggression is normally ruled out (though it sometimes occurs).

Reading various paleoanthropology publications

reveals both the extent and the degree of conflicts in a field that, as a whole, has very little hard data, most of which can be construed in several different ways. Controversy occurs because new fossil discoveries are typically not shared with other scientists for years, if ever, due to publishing priority concerns. A common complaint is that the persons claiming the discovery are too slow to publish their findings—and are

flinging around arguments and interpretations without giving others something solid in print to evaluate. The Leakey and Johanson camps also claim each others' popular books are filled with inaccuracies. White and Johanson in particular complain that while Leakey refuses to accept the designation and placement of *Australopithecus afarensis*, he will not offer an alternative (Holden 1981, p. 739).

Typically, to get full credit for a fossil discovery one must publish first. To do this the discovering paleoanthropologists retain exclusive access to their fossils for a decade or more before allowing others to study them. Since these fossils are often fragile and easily broken, working with them tends to damage them. This fact further discourages allowing direct access to the fossil to those outside the group discovering it.

For all of these reasons most researchers have access only to photographs or, at best, casts of the fossils. Most anthropologists must rely on descriptions and interpretations produced by the discoverer of the fossils—the very person who has a vested interest in proving his or her own theories. In view of this fact, it is not surprising that major disagreements are common.

Hoarding Important Fossil Finds

An example of this conflict is the fact that when a fossil is discovered, the discoverer tends to hoard it to prevent others outside of his clique from exploiting or getting credit or fame from their discovery (Tattersall and Schwartz 2002, p.239). A growing tendency exists for certain paleoanthropologists to refuse access to their finds even after they have published a preliminary description of their fossil discoveries at which time their artifacts are under the rules of the discipline which stipulate that the fossils are to be shared with other researchers. In these cases the discoverers often argue that they have the right to withhold their fossil finds because of the dubious claim that the

initial publications, even when prepared in accord with the dictates of the *Code* and published in major vehicles such as *Nature* and *Science*, merely constitute “announcements.” “Publication,” it is disingenuously contended, occurs only with the appearance of a long interpretive monograph (Tattersall and Schwartz 2002, p.240).

Tattersall and Schwartz add that it is common for this monograph publication period to take decades or longer, and may never be completed. Examples they provide is Louis Leakey's *Homo habilis* finds, which were finally written up in the form of a detailed technical monograph by Professor Phillip V. Tobias “some 30 years after their discovery, while the important fossil crania from Forbes' Quarry and Steinheim” site are yet to be written up in any detail 150 and 69 years respectively since their recoveries. More recently

several new hominid species legally published as early as 1994 still remain off-limits to researchers not belonging to the describing cliques. This has potentially harmful consequences, for, if not rapidly subjected to informed scrutiny, the initial describers' interpretation of the specimens' significance tends automatically to become established wisdom in the field. In this way, untested notions readily become incorporated into textbooks, the secondary literature, and the vast reaches of the popular media, without any consideration of alternative interpretations. As things too often are, alternative interpretations are difficult or impossible to formulate, because even casts (poor substitutes for the originals in any event) are rarely available and ... photographs of specimens published in *Nature* or *Science* tend to be so small and lacking in contrast that much useful information is obscured (Tattersall and Schwartz 2002, p.240).

A more recent example is Professor Teuku Jacob who, until his death in 2007, attempted to withhold the remains of *Homo Floresiensis* even though he was not party to the initial discovery (Culotta 2005a).

Blocking Access to Creationists

The difficulty that creationists and others have in obtaining access to fossils is another problem. Museums and other human fossil remains' repositories commonly refuse access requests made by creationists. As Tattersall and Schwartz wrote

Science is a system of provisional knowledge that constantly requires re-examination and testing. It cannot function as a system in which assertions have to be left unchallenged for want of free access to the primary data (Tattersall and Schwartz 2002, p.239).

The difficulties that confront creationists, such as Dr. Jack Cuozzo when he attempted to access fossil humans, illustrate the problem in challenging existing interpretations. His experience is detailed in his book *Buried Alive: The Startling Truth About Neanderthal Man* (Cuozzo 1998).

Arrogance in Paleoanthropology

A major issue in dealing with the problem of arrogance is that no small amount of arrogance exists

within the scientific community. Hooper concluded that some scientists dogmatically believe not only that they have the answer, but that only they have the right to ask the questions—and if they don't, no one else should (Hooper 2002). A review of history vividly shows that an “other side” often exists to the dominant views of scientists in each camp—the views of those who dominate the literature in *Nature*, *Science*, and other leading scientific journals.

This fact illustrates a common problem in paleoanthropology related to the difficulties leading scientists have in evaluating the data fairly and objectively. An example is Tim White, professor at the University of California Berkeley, who had a falling out with Donald Johanson to the extent that; “White and Johanson now barely speak to each other because of earlier bitter disagreements over research style and conduct” (Dalton 2006, p. 269). Tim White's former University of Michigan professor, Dr. Milford Wolpoff, added that

Tim knows the “right” way ... and that's with a capital “R” I used to think once he got a job and was treated with professional respect, he'd calm down a bit. But I was wrong ... White's self-righteous stance surfaced [in the field] leading him to be “unspeakably rude and arrogant to others” (Morell 1995, p. 477).

Similar conflicts are not uncommon—in this field, “Squabbles over credit for discoveries and permits to work at key sites are common” (Dalton 2006, p. 269). An example Dalton cites is competitors of Johanson and Taieb highlighted a potentially inflammatory passage in a book Johanson published. Their goal was to upset the Ethiopian authorities to cause paleoanthropologist Don Johanson and Maurice Taieb to be banned from research in Ethiopia. The ploy was successful—they were banned for a decade.

Morell concludes that, like Wolpoff, Richard Leakey also “assumed that White would eventually outgrow this behavior. Instead, “Richard himself became a target” (Morell 1995, p. 477). For example when Richard Leakey explained his concerns about White's interpretation of a fossil, Professor White “started shouting at me, calling me a dictator, said that it was a disgrace that I should be in charge—all this rubbish ... he wanted to have nothing more to do with me, and finally walked out of my office and slammed the door” (Morell, 1995, p. 478).

Many anthropologists have concluded that because humans are “a bloody aggressor,” the outcome of the survival of the fittest battle, they should not be surprised by this behavior. Leakey's critics view him as the leader of a small clique of researchers that are trying to

build its own scientific empire in East Africa; a clique of what Tim White terms “academic loyalists” devoted

to Louis Leakey's stubborn adherence to unfounded theories about man's origins. Critics also say that a favorite Leakey theme—that man is innately a cooperative and food-sharing creature rather than a bloody aggressor—is at best only thinly supported by available evidence (Holden 1981, p. 739).

The Leakeys have been at the center of this war for the last half-century. And unfortunately, for several reasons

paleoanthropology has a ‘history of being dominated by individualists, and the late Louis Leakey, perhaps the most colorful of them all, bore major responsibility for enlarging the endeavor by drawing in the public's interest—and along with that, money’ (Holden 1981, p. 737).

When Louis Leakey's son, Richard, was invited as a guest on Walter Cronkite's television program to discuss evolution and creationism as an “ardent anti-creationist,” Richard agreed to appear (Morell 1995, p. 520). This ploy to get him on the show turned out to be a ruse—Cronkite actually did not want Richard to rail against creationism but rather to pit him and Johanson against each other to debate their radically different opinions about *Australopithecus afarensis* and other putative hominids.

On the show, it turned out that Johanson was less interested in an intellectual exchange to achieve a better understanding of human evolution than he was in attacking those with whom he disagreed. Some people felt Richard Leakey came out better in this exchange. Shortly after the Cronkite show, the National Geographic Society—the Leakeys' main source of financial support—turned down Richard's grant for funds to support his Koobi Fora fossil exploration research and for new explorations north and west of Lake Turkana (Morell 1995, p. 523).

The endless, vicious, and sometimes physical confrontations between the Leakeys and other leading anthropologists, such as Donald Johanson and Timothy White, are very illuminating as to how critically important preconceptions are in interpreting and understanding the extant fossil evidence. Because fossil evidence usually accounts for less than ten percent of the animal by volume (rarely are organs, muscles, skin, hair or other parts preserved), this evidence can be interpreted in several ways, even in the rare situation in which a skeleton is fairly complete. Lucy (*Australopithecus afarensis*) is the most complete putative human ancestor skeleton discovered so far (Dalton 2006, p. 268). Only less than 40% of the skeletal remains were eventually recovered at Hadar, and debate still exists whether the bones recovered all belong to the same individual. Most other fossil finds consist of, at best, a few bone fragments and sometimes only teeth. As Lewontin noted, when we study the

remote past, before the origin of the actual species *Homo sapiens*, we are faced with a fragmentary and disconnected fossil record. Despite the excited and optimistic claims that have been made by some paleontologists, no fossil hominid species can be established as our direct ancestor (Lewontin 1995, p. 163).

A problem noted above is that cliques develop, and the leader of one of these cliques justified excluding others from examining the fossils by implying “that he had assembled the best possible team to study one set of fossils concerned (and thus by implication that it was unnecessary for others to see them).” Furthermore, the author of a *Science* report on the fossils asked “if it ‘really mattered’ whether only the describers and their cronies saw the type specimens of new species at first-hand” (Tattersall and Schwartz 2002, p. 240).

They conclude that it is “absurd to act as if the finders of particular fossils are alone qualified to study them.” And that it is “one thing for high priests in temples to reserve access to religious relics; science is an entirely different case. Science is not a matter of faith (or of power); it is a matter of the free flow of information” (Tattersall and Schwartz 2002, p. 241).

Debates Part of Science

Debates are required to make progress in science—but the viciousness that Morell eloquently documents is hardly what we would expect of paleoanthropologists who are interested in truth and desire to rationally evaluate their ideas. Nor is this behavior rare. Gardner notes that mainline anthropologists reacted to one fellow anthropologist, Dr. William Arens, who disagreed with the orthodox view “with the same fury they displayed toward Derek Freeman’s *Margaret Mead and Samoa*, a book exposing Mead’s gullibility in taking at face value the myths told to her by Samoan pranksters.” Gardner adds that

Anthropologists have yelled insults at Arens in meetings. They have pounded him relentlessly in their writings. Reviewers called his book “dangerous” and “malicious” (Gardner 2000, pp. 139–140).

The extent of the outrageous behavior shown by these individuals was so extreme that it could not be discussed in a family publication. In addition, the morals of some leading paleoanthropologists leave much to be desired. Some people, especially females, have concluded that Louis Leakey and his cohort took advantage of women by using their position to exploit them for sexual favors (Morell 1995). Some also condemn Louis’ son, Richard, as not only wrong but also ignorant. Holden wrote that some authorities actually view him “as a nonscientist who parades his lack of credentials in the many speeches he delivers.” His critics add that the

“deficiencies in his education” show up in “sheer ignorance of basic evolutionary principles, and the non-African aspects of this field,” wrote C. Loring Brace of the University of Michigan in a scathing review of two books, *Origins* and *People of the Lake* (Holden 1981, p. 739).

Professor Brace also contends that Leakey held very antiquated views on evolution. The major 1980s and 1990s war, though, was between the Leakey and Johanson camps involving, not only differing interpretations, but also claims that the other was ignorant.

Professor Reiner Pötsch von Zieten’s Key Discoveries Falsified

Inquiry has now confirmed what the British *Guardian* called “one of archaeology’s most sensational finds”—a 36,000 year-old skull fragment discovered in a peat bog near Hamburg has now been falsified. Until falsified this fragment was believed to be a “vital missing link between modern humans and Neanderthals” (Harding 2005). The thirty-year academic career of the distinguished German anthropologist Professor Reiner Pötsch von Zieten “has now ended in disgrace after the revelation that he systematically falsified the dates on this and numerous other ‘stone-age’ relics” (Harding 2005, p. 1).

The crucial skull fragment once believed to have come from the world’s oldest Neanderthal has, according to Oxford University’s radiocarbon dating unit, now been determined to be closer to a mere 7,500 years old. Other skulls were incorrectly dated by Pötsch as well. After re-dating the evidence it was concluded that Pötsch had methodically falsified the dates on numerous artifacts: he had simply made up the dates to fit his theories. Testing revealed all of the skulls dated by Pötsch were, in fact, far younger than he had claimed.

Thomas Terberger, who discovered the hoax, stated that as a result of the hoax “anthropology is going to have to completely revise its picture of modern man” (quoted in Harding 2005, p. 1). The committee also found that Von Zieten committed numerous other “falsehoods and manipulations.” His deceptions were so serious that it “may mean an entire tranche of the history of man’s development will have to be rewritten” (Harding 2005, p. 1).

Yet another of Professor Von Zieten’s finds, the Binshof-Speyer woman, was determined to have lived in 1300BC, not 21,000 years ago as Von Zieten argued, and the Paderborn-Sande man, which was dated by the professor at 27400BC, died only “a couple of hundred years ago, in 1750” (Harding 2005, p. 1). Further research found that Pötsch had passed off fake fossils as real, and had also plagiarized other

scientists' work. The scandal was finally exposed when Professor Potsch was caught trying to sell his department's entire chimpanzee collection to a museum in the United States.

The committee that investigated him required ten different meetings with twelve witnesses to produce findings that the committee documented "were increasingly bizarre. After a while it was hard to take it seriously . . . It was just unbelievable. . . what he did was incredible" (quoted in Harding 2005, p.2). It was also determined that the professor, who had a fondness for Porsches and Cuban cigars, could not even operate the carbon dating equipment that he had claimed to have used to produce his now discredited dates! This claim should have aroused suspicion because carbon-14 dating is most always done by highly trained specialists in well-equipped labs, rarely by the paleontologists.

Professor Von Zieten was forced to end his career after the confirmation of his many "falsehoods and manipulations" came to light. This scandal is critically important in physical anthropology because his 30 year academic career yielded many sensational finds that were important evidence for modern evolution theory. He evidently found that he could get away with the frauds, and continued to make outrageous claims until they became so ludicrous that somebody began to investigate. The university administrators admitted that they should have discovered the professor's bizarre fabrications much earlier, but the "high profile anthropologist . . . proved difficult to pin down" (Harding 2005, p.2).

The Hobbit Bone War

One of the latest paleoanthropology conflicts was over the so-called Hobbit fossil man bones believed to be those of eight individuals discovered in 2003 in the Liang Bua cave on the Indonesian island of Flores. The bones are from a creature now given the scientific name *Homo floresiensis*.

The bones' discoverer believed they represent a new branch of human evolution. A major problem in this interpretation is the bones were dated at only 18,000 years old. Although discovered by a team led by Mike Morwood, a rival team soon had taken possession of the skeleton. The conflict was exacerbated when Indonesian paleoanthropologist Teuku Jacob, noting that pygmies still live nearby, concluded that the bones are not from a missing link, but rather are a "modern human pygmy with microcephaly" (Culotta 2005a). Morwood judged this conclusion mind-boggling (Culotta 2005a). Tensions built when Jacob made public his conclusion that *H. floresiensis* is not a new human species, but a *Homo sapiens*. The bones were later returned to the scientists that discovered them "after months of dispute with a competing

scientist who had taken them away" (Dalton 2005a).

Tim White and Chris Stringer agree with Morwood's team and rejected Dr. Jacob's conclusions (Dalton 2005a). Dr. Jacob sent rib bone pieces to be DNA analyzed to help settle the dispute, but those who advocated the new species theory have demanded that they be returned immediately (Dalton 2005a). Soon after the bones were returned, Morwood reported that they were "seriously damaged," but Jacob insisted that the bones were intact when they left his lab (Culotta 2005b). Morwood also claimed that the bones were not only damaged, but a "still-unpublished jawbone 'broke in half . . . and was badly glued back together, misaligned'" and "the left side of the pelvis—which he calls one of the hominids most distinct features—was 'smashed'" making it much more difficult to determine the fossil's missing link status (Culotta 2005b).

Another problem is, in the process of making a mold to make copies of the bones, Jacob's critics claimed that "breakage and loss of anatomic detail," occurred and the "cranial base of the skull and jawbone" were allegedly seriously damaged (Culotta 2005b). The jaw was broken in half between the front teeth, obliterating structures critical to its identification and the pelvis was shattered into "100 crumbs" (Dalton 2005b, p.934).

Dr. Jacob denies doing any damage, noting that his lab is the only one in Indonesia set up for paleoanthropological study and has highly trained staff and up-to-date equipment. In fact, Jacob noted "his team reconstructed some of the remains, putting pieces together in order to study them" (Culotta 2005b). A number of paleoanthropologists have sided with Jacob, one noting that he saw the bones, including the left side of the pelvis, which was undamaged. Another researcher doubted if just making molds could damage the bones (Culotta 2005b).

In October 2005 more evidence, including two jawbones that are virtually identical, was uncovered that, Morwood claimed, supported the new species interpretation. Examples he cited in support of his interpretation include the jaws lacked a chin structure. The researchers argued that this was important because chins are a distinguishing feature of *H. sapiens*. They also found spectacularly long arm bones identified from two individuals (Culotta 2005). These finds raised more question than they answer.

Dalton wrote that the Liang Bua Cave controversy is not rare, but in this case was unprecedented. Morwood added that the conflict between the paleoanthropologists resulted in his team not being allowed to work at the hobbit work site, the Liang Bua Cave:

Disputes over paleoanthropology dig sites are not uncommon—there has been considerable squabbling over the control of hominid sites in Africa. But it is

unprecedented to close down such a spectacular site. “Liang Bua is the crown jewel of the caves,” says Brown, adding that only a small percentage of it has been excavated so far. “This is where the team should be focusing” (Dalton 2005b, p.935).

Research has continued at other sites on the island of Flores and nearby islands, the researchers so far finding

promising hints about the origin of *H. floresiensis*, but no new hominid bones. Work in the Soa Basin, for example, suggests that hominids were present on Flores significantly earlier than 840,000 years ago, the earliest date previously reported. ... But without access to Liang Bua, the mysteries of the ancient “hobbit” people will probably remain secret for the foreseeable future (Dalton 2005b, p.935).

Nonetheless, the quarrel over whether the find really represents a new species continues to the extent that paleoanthropologist Peter Brown concluded “It is a complete circus” (Dalton 2005a). The latest finds include fragments of six or more persons, producing the conclusion that

Overall, *H. floresiensis* presents a fascinating conundrum and prompts some tantalizing predictions that will continue to strain credulity without more fossil evidence (Lieberman 2009, p.42).

One reason for this conundrum is that a “minuscule brain in a species so recent that also made stone tools has strained credulity” of researchers (Lieberman 2009, p.41). The new view is problematic because “if proponents of the new view of hobbits are right, the first intercontinental migrations were undertaken hundreds of thousands of years earlier than” previously believed

and by a fundamentally different kind of human, one that arguably had more in common with primitive little Lucy than the colonizer paleoanthropologists had envisioned. This scenario implies that scientists could conceivably locate a long-lost chapter of human prehistory in the form of a two-million-year record of this primitive pioneer stretching between Africa and Southeast Asia if they look in the right places (Wong 2009, p.72).

Needless to say, this conclusion “does not sit well with some researchers” for many reasons, including the concern that the “further back we try to push the divergence of the Flores [hominin], the more difficult it becomes to explain why a [hominin] lineage that must have originated in Africa has left only one trace on the tiny island of Flores” (Wong 2009, p.72).

The new view has been challenged by a number of other scientists, including Field Museum of Chicago evolution primate expert Dr. Robert Martin who “remains unconvinced that *H. floresiensis* is a legitimate new species” (Wong 2009, p.72). He has concluded that the first find, called LB1—the

only example whose brain size was known—was a modern human with some yet unidentified medical disorder. As of this date, the conflict continues, but meanwhile

many scientists are welcoming the shake-up. LB1 is “a hominin that no one would be saying anything about if we found it in Africa two million years ago,” asserts Matthew W. Tocheri of the Smithsonian Institution, who has analyzed the wrist bones of the hobbits. “The problem is that we’re finding it in Indonesia in essentially modern times” (Wong 2009, p.73).

After five years and over a dozen scholarly papers on Hobbit, one researcher added that

If we don’t find something in the next 15 years or so in that part of the world, I might start wondering whether we got this wrong, ... The predictions are that we should find a whole bunch more [fossils] (Wong 2009, p.73).

Aimé Rutot and the Eolith Controversy

Belgian Museum conservator Aimé Rutot (1847–1933) was a leading European paleoanthropologist widely respected by many in the scientific community for decades. As a prominent scientist with an international recognition, he published in the leading scientific journals not only in geology, but also in paleoanthropology (Bont 2003, p.606). Rutot specialized in early human artifacts, especially stone flints (Bont 2003, p.604).

Rutot is most well known for his work on eoliths, artifacts believed to be the “crude evolutionary precursors of Paleolithic” tools that document human brain evolution. Eolith is Greek for *eos* meaning dawn and *lithos* meaning stone. Eoliths were first named and collected by Benjamin Harrison in about 1885 (O’Connor 2003, p.255). The “dawn stone” finds were a major scholarly topic for decades. By evaluating the eoliths, Rutot and his many disciples concluded they were the products of the evolving human brain. They reasoned the eoliths were evidence that primitive brains produced primitive tools and more advanced evolved brains produced more advanced tools. Rutot and his supporters concluded that the eoliths were physical evidence that proved a very primitive human brain once existed, thus proving evolution.

These prePaleolithic tools were earlier and simpler than those fashioned by more evolved humans—so simple that it was difficult to determine if they were even stones reworked by humans. One of his many highly respected converts included Professor Hermann Klaatsch (1863–1916) who discussed in some detail Rutot’s work and its importance as evidence for human evolution (Klaatsch 1923, pp.19, 117, 237, 246, 265). Another supporter of the eolith theory was Charles Dawson of the Piltdown forgery fame, who presented papers at conferences, such as the Royal

Anthropological Institute in 1915, on the importance of eoliths in human evolution (Weiner 2003, p. 135).

Around 1900 more discoveries strengthened Rutot's belief in the human origins of eoliths (Bont 2003, p. 608). As many of the marks on the stones did not appear intentional, such as is obvious in Indian arrowheads, Rutot concluded the marks documented "a primitive idea of utilization" of stones (Bont 2003, p. 608). His ideas were then spread throughout the world by the sale of artifacts, statues and pictures, all which served to sell human evolution to the public. They even were involved in the famous Piltdown forgery (Weiner 2003, pp. 55–56, 116).

Rutot's most ambitious museum project was the "three-dimensional reconstruction of human evolution" based on his eolith ideas that humans evolved from a "bestial precursor" to modern mankind. In this and other displays the Negro was often represented as the evolutionary predecessor of the white race (Bont, 2003, p. 627). The statues all depicted some combination of simian and human (often Negro) traits assembled according to his eolith theory, not fact. His view, in true Darwinian philosophy, was the "white Europeans were the vanguard of progress," and that war was actually necessary for progress; both ideas were woven into his eolith theory (Bont 2003, p. 628). He also relied heavily on racism, concluding that the "three human races had only a very distant common ancestor." As a result Rutot did not speak

of "the origin" of humanity but of plural "origins."

In his view, the superficial similarities between the different races were based on resemblances in lifestyle, not on a common origin. Rutot would even go on to connect every human race with a type of anthropoid ape, stating that the former were the evolved and the latter the degenerate forms of a common stock (Bont 2003, p. 628).

His success in spreading his Eolithic theory and his views of prehistoric races was due in part to the fact that they met accepted scientific standards. Furthermore, they were the bearers of ideas that were shared by at least some European scientists ... His ideas spread because he was able to involve lots of people in his expanding networks, at the center of which was his own museum. These networks helped him to be omnipresent. He published his articles in leading periodicals; he received archaeological finds from all over the world; his categories were used in important museums; his theories were taught by respected scholars; and his reconstructions of the past were widely known and accepted as authoritative. He skillfully used ... different channels to spread his ideas—in popular magazines as well as in universities (Bont 2003, p. 629).

Rutot concluded that the evolution from Eolithic

to Paleolithic man was not Darwinian, slow and gradual, but rather, based on the archaeological record and De Vries' mutation theory it occurred rapidly by leaps (Bont 2003, p. 616). From this evidence Rutot concluded "that evolution occurred by leaps and that small individual variations were of no importance in a long-term perspective" (Bont 2003, p. 616). Based on the archaeological record, Rutot determined that a "clear dividing line" existed between "eoliths and paleoliths" which we know today was actually a division between naturally made and human made artifacts (Bont 2003, p. 616).

Rutot cooperated with other scientists and other researchers by sending them reports, photographs and even sample eoliths from his extensive collection for their evaluation. This enabled him to gain international support for his ideas. At the peak of this debate, in 1906, Rutot's work was widely accepted and he received numerous scientific rewards, recognition, and honors.

As more research was done, the doubts about both his theory and his evidence mounted. The main problem he and everyone else had was to distinguish "real eoliths" from "pseudo-eoliths" (Bont 2003, p. 610). The struggle between the supporters of his eolith theory and the detractors became fierce, with each side accusing the other of forgery, of retouching their photographs, and even some claiming that their critics were mentally ill (Bont 2003, p. 614).

Most of Rutot's examples of the putative oldest known human tools that he labeled eoliths have now been shown to be misidentified—careful examination has concluded that they showed no clear evidence of human workmanship, debunking Rutot's whole eolith theory and, concurrently, his attempt to construct a prehistoric race of humans (Bont 2003, p. 604). Rutot's "extensive collection of stone implements" has now been "discredited as an assemblage of forgeries and misinterpretations" (Bont 2003, p. 604). Rutot once remarked that, although "everything has been discredited," by his peers, he still clung to his conclusions (Bont 2003, p. 605).

Rutot tried to extrapolate from his eoliths the habits and mental capacities of the makers—now recognized as a foolish exercise, considering the fact that the eoliths were all natural, and not man-made. In his writings Rutot went into enormous detail about the character, motivations, goals, mentality, intelligence, attitudes, and logic of his race of people all based on his eolith stones! He concluded the eolith makers were passive, peaceful, and imitative creatures (Bont 2003, p. 616). The eoliths also had a "certain degree of perfection," but no evidence of progressive or active creators, nor of their mental state.

He even discussed in detail the relationships between the eolith and the Paleolithic people, which

he determined were two different races. He concluded the inferior race, the eoliths creators, became extinct. His stone examples caused Rutot to conclude that the eolith and other inferior races lacked the “progressive mutations” of the white race, and eventually followed the Tasmanian example and became extinct. Furthermore

Pygmies, Bushmen, Fuegians, and North American Indians were next on Rutot’s list, and he made it clear that racial competition would eliminate many other groups as well. Like many other nineteenth-century anthropologists, Rutot stated that their extinction was a corollary of their social and biological primitivity. This was the “natural game of the laws of limitation, combined with the ever-extending development of the so-called civilized peoples.” Violent colonialism was just part of natural progress ... Time served only as function of natural selection in which the mentally superior eventually massacred the inferior ... In Rutot’s world there existed two options, “to evolve or to perish,” and both outcomes were direct results of biological determinism (Bont 2003, p. 619).

A major confirmation of the existence of the eolith race was Piltdown man that, in Rutot’s mind, proved his theory because

Piltdown was not only the old human fossil that the *éolithophiles* had been waiting for; it was even “excavated” in immediate association with Eolithic tools. Furthermore, most scientists interpreted the relatively developed skull as an argument in factor of parallel evolution, making Neanderthal a primitive dead-end side branch—a hypothesis Rutot had favored for some years. With regard to the dating, Rutot initially endorsed the claim of the influential Scottish anatomist Arthur Keith (1866–1955) that the cranium pieces were the remains of “Tertiary man.” Woodward and Dawson had more cautiously presented it as a Lower Quaternary find, but Rutot eagerly agreed with the English *éolithophiles* that the producer of the Pliocene Sussex tools had been discovered (Bont 2003, p. 621).

Rutot was later forced to change his mind about Piltdown man as new research proved his ideas wrong. Bont notes that both the Piltdown man and eoliths were “inextricably bound up with” efforts to find putative missing links to document evolution by the “believers ... to prove their views” (Bont 2003, pp. 621–622).

Rutot’s Theory Disproved

The main evidence against the eolith theory was the discovery that perfect eoliths could be produced by natural forces such as pressure and temperature changes that caused rock flaking. Water movement

could also produce the eolith pattern, which resembled a stone tool that had one or two chips, as opposed to a human made stone tool that had 20 to 100 flacks to produce a definite shape, such as a sharp edge that could be used for cutting or scraping. Hazzledine Warren extensively researched the fracture of flint for five years to evaluate the Eolithic theory, concluding that no clear evidence has been produced that proved the existence of eoliths (Hazzledine Warren 1905, p. 337). In his words, the eoliths “must be due to intelligent design on the part of man” but the evidence for this conclusion, “though attractive on the surface, is unscientific to the core” ending the three-decade-long debate (Hazzledine Warren 1905, p. 338). The famous paleoanthropologist Professor Marcellin Boule also came to the same conclusion (O’Connor 2003).

Charles Dawson’s Many Forgeries

Although most well known for his connection to the Piltdown fraud, Charles Dawson was also involved in numerous other questionable paleoanthropology finds that relate to human evolution (Bergman 2003; Russell 2003; Walsh 1996). Dawson “achieved recognition as a great, if not *the greatest*,” British paleoanthropologist of his day (Russell 2003, p. 10). Although Dawson earned a living as a solicitor, since his youth he spent much time exploring in search of, and collecting, fossils. He worked with Samuel Beckles, a distinguished geologist (Russell 2003, p. 13). Dawson eventually amassed a considerable collection of reptilian and mammalian fossils that “aroused the interest of the Natural History Museum, which promptly bought it” (Walsh 1996, p. 16). So great were his achievements that in 1885 he was elected a fellow of the Geological Society at the young age of 21! Russell documents Dawson’s enormous productivity, enabling him to sell his many fossil discoveries to the British Museum’s “Dawson Collection” throughout the late 1880s to the early 1900s for large sums of money. His many important finds included

three new species of dinosaur, one of which was named *Iguanodon dawsoni* by the palaeontologist Richard Lydekker. Later discoveries included the finding, in 1891, of teeth from a previously unknown species of Wealden mammal, later named *Plagiaulax dawsoni*. Dawson periodically continued his fossil-hunting activities up until 1911, at times working with Marie-Joseph Pierre Teilhard de Chardin, a young Jesuit priest and keen amateur geologist, discovering more unique remains, including a new species of mammal named *Dipriodon valdensis*, and two new forms of fossil plant, *Lycopidites teilhardi* and *Salaginella dawsoni* (Russell 2003, p. 14).

Another problematic example was *Plagiaulax dawsoni*, a new mammal species and an “important missing link” in the evolutionary tree leading to

humans. The find, a single tooth discovered in 1891, was submitted and evaluated by the curator of the British Museum of Natural History, Arthur Smith Woodward (Walsh 1996, p.16). Woodward's conclusion, based on the single tooth, was that the tooth was of a "transitional form between reptile and mammal" (Walsh 1996, p.182). Then, 20 years later, Dawson discovered two more teeth, and soon after, Teilhard de Chardin found another tooth, all which they concluded confirmed their original conclusions. Since then, no more evidence of *Plagiaulax dawsoni* has come to light (Russell 2003, pp.28–29).

As was true of many of Dawson's finds the "date and location of the discovery are both vague" (Walsh 1996, p.183). Research has now conclusively shown that *Plagiaulax dawsoni* is a fake (Russell 2003, p.30). Dawson was an avid collector of fossils and likely modified some of the teeth in his collection to make them look more like those of the hypothetical missing link. All of the major persons involved in the *Plagiaulax dawsoni* fake were also involved in the Piltdown affair, and Dawson was the likely hoaxer. Dawson also used some of the same deception techniques used in perpetuation of the Piltdown hoax. All of his fossil and other finds eventually came under suspicion, causing a careful re-evaluation that proved many, if not most, of his discoveries questionable, if not outright forgeries.

Weiner concluded that the field work that brought Dawson to the notice of paleontologists, from his first discovery, *Plagiaulax*, to his last, *Piltdown*, were evolutionary links (Russell 2003, p.167). The scientific method is an ideal approach to gaining knowledge, but it is an especially difficult way to "prove" certain scientific hypotheses, such as those involving human origins. A good example of this difficulty is "the theory of evolution [which] is ... a theory highly valued by scientists ... but which lies in a sense too deep to be directly proved or disproved" (Broad and Wade 1982, p.17).

Honest Paleoanthropologists

Evolutionists are at times very candid about the state of human evolution, such as Johanson's admission that "nobody really places a great deal of faith in *any* human [evolution] tree" now (from interview with Johanson quoted in Morell [1995, p.546] emphasis his). Yet, many of their arguments are over this tree, which seems to change with each new fossil find. The reason is that these trees are based on evidence so fragmentary that a variety of plausible interpretations are possible—which is a major reason for the many heated conflicts that the various participants in paleoanthropology have been involved in since the field originated over a century ago.

Conclusions

In a field based on little empirical evidence, many assumptions and strong personalities, the bone wars illustrate the conflicts common among scientists in this area. The unprofessional and at times even fraudulent behavior of the leading participants is far from what one would expect from highly trained professionals. Holden concluded that the problem in paleoanthropology is the fact that this field

naturally excites interest because of our own interest in our origins. And, because conclusions of emotional significance to many must be drawn from extremely paltry evidence, it is often difficult to separate the personal from the scientific in disputes raging within the field. ... The primary scientific evidence is a pitifully small array of bones from which to construct man's evolutionary history. One anthropologist has compared the task to that of reconstructing the plot of *War and Peace* with 13 randomly selected pages. Conflicts tend to last longer [than in other fields] because it is so difficult to find conclusive evidence to send a theory packing (Holden 1981, p.737).

Paleoanthropology is an "unexact kind of science" (Medawar quoted in Hill 1986, p.209). Tattersall and Schwartz even debated if paleoanthropology is a science (Tattersall and Schwartz 2002, p.239). And, although the field is more sophisticated today "modern as the undertaking has become, it continues to be riddled with controversies and dominated by personalities" (Holden 1981, p.737). This brief survey supports Holden's conclusion that the

very nature of paleoanthropology encourages divisiveness. ... Louis Leakey's personal ideas about the extreme antiquity of the *Homo* line ... continue to divide the field years after his death (Holden 1981, p.737).

Fraud and new discoveries are forcing so much revision in the paleoanthropology field that *Time* magazine Senior Science Editor stated that so many facts he once believed as a former science teacher to be true in evolution have been found to be false that he was forced to concede "just about everything I taught them [his students] ... was wrong" (Headland 1997, p.605).

References

- Bergman, J. 2003. A history of the Piltdown hoax. *Rivista di Biologia/Biology Forum* 96, no.3:457–484.
- Bergman, J. 2006. The history of *Hesperopithecus*: The human-ape link that turned out to be a pig. *Rivista di Biologia/Biology Forum* 99, no.2:205–224.
- Bont, R.D. 2003. The creation of prehistoric man: Aimé Rutot and the eolith controversy, 1900–1920. *Isis* 94:604–630.
- Broad, W. and N. Wade. 1982. *Betrayers of the truth: Fraud and deceit in the halls of science*. New York: Simon and Schuster.

- Coyne, J. 2009. *Why evolution is true*. New York: Viking Books.
- Culotta, E. 2005a. Battle erupts over the 'hobbit' bones. *Science* 307:1179.
- Culotta, E. 2005b. Discoverers charge damage to 'hobbit' specimens. *Science* 307:1848.
- Cuozzo, J. 1998. *Buried alive: The startling truth about neanderthal man*. Green Forest Arkansas: Master Books.
- Dalton, R. 2005a. Fossil finders in tug of war over analysis of hobbit bones. *Nature* 434:5.
- Dalton, R. 2005b. More evidence for hobbit unearthed as diggers are refused access to cave. *Nature* 437:934–935.
- Dalton, R. 2006. The history man. *Nature* 443:268–269.
- Feder, K.L. 2006. *Frauds, myths, and mysteries: Science and pseudoscience in archaeology* 5th ed. New York: McGraw Hill.
- Fix, W.R. 1984. *The bone peddlers: Selling evolution*. New York: Macmillan Publishing Company.
- Gardner, M. 2000. *Did Adam and Eve have navels? Discourses on reflexology, numerology, urine therapy, and other dubious subjects*. New York: W.W. Norton and Company.
- Gee, H. 2001. Return to the planet of the apes. *Nature* 412:131–132.
- Harding, L. 2005. History of modern man unravels as German scholar is exposed as fraud. *The Guardian*, February 19.
- Hazzledine Warren, S. 1905. On the origin of 'Eolithic' flints by natural causes, especially by the foundering of drifts. *The Journal of the Anthropological Institute of Great Britain and Ireland* 35:337–364.
- Headland, T.N. 1997. Revisionism in ecological anthropology. *Current Anthropology*, 38, no. 4:605–630.
- Hill, A. 1986. The gift of taungs. *Nature* 323:209.
- Holden, C. 1981. The politics of paleoanthropology. *Science* 213:737–740.
- Hooper, J. 2002. *An evolutionary tale of moths and men; The untold story of science and the peppered moth*. New York: W.W. Norton and Company.
- Judson, H.F. 2004. *The great betrayal: Fraud in science*. New York: Harcourt.
- Klaatsch, H. 1923. *The evolution and progress of mankind* (ed. and enlarged A. Heilborn, trans. J. McCabe). New York, New York: Frederick A. Stokes Company Publishers.
- Kohn, A. 1988. *False prophets: Fraud and error in science and medicine*. New York: Barnes & Noble Books.
- Lewontin, R.C. 1995. *Human diversity (Scientific American library series)*. New York: W.H. Freeman & Company.
- Lieberman, D.E. 2009. *Homo floresiensis* from head to toe. *Nature* 459:41–42.
- Morell, V. 1995. *Ancestral passions the Leakey families and the quest for humankind's beginnings*. New York: Simon and Schuster.
- O'Connor, A. 2003. Geology, archaeology, and the raging vortex of the 'Eolith controversy.' *Proceedings of the Geologists' Association* 114:255–262.
- Russell, M. 2003. *Pitldown Man: The secret life of Charles Dawson & the world's greatest archaeological hoax*. Gloucestershire, Great Britain: Tempus Publishing.
- Tattersall, I. and J.H. Schwartz. 2002. Is paleoanthropology science? Naming new fossils and control of access to them. *The Anatomical Record* 269:239–241.
- Walsh, J.E. 1996. *Unraveling Pitldown: The science fraud of the century and its solution*. Random House: New York.
- Weiner, J.S. 2003. *The Pitldown forgery*. New York: Oxford University Press.
- Wong, K. 2009. Rethinking the hobbits of Indonesia. *Scientific American* 31, no. 5:66–73.