ISCID Archive, August 2004

Human Origins and Intelligent Design*

Review and Analysis

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ABSTRACT: Intelligent agents can rapidly infuse large amounts of genetic information into the biosphere, reflected in the fossil record as the abrupt appearance of novel fossil forms without similar precursors. These designed "basic types" may undergo limited genetic change, diversifying into similar species belonging to the same basic type clade. Paleoanthropological studies reveal that early hominids appear suddenly, without clear direct fossil ancestors, and distinct from previous hominoids. Within hominids, evolutionary theory proposes that the genus *Homo* is descended from the genus *Australopithecus*, and have cited *Homo habilis* as a possible link with transitional morphology. Recent studies indicate *habilis* should not be classified within *Homo* but rather under *Australopithecus*, and that both its morphology and temporal span preclude *habilis* from consideration as a link between the two genera. Subsequent evolutionist studies highlight significant morphological differences between *Homo* and *Australopithecus* requiring very rapid and significant genetic changes. The abrupt appearance of *Homo* as a novel and distinct form, significantly different from earlier fossil forms and without links to previous fossil forms, implicates intelligent design as a cause involved in the origin of *Homo*. *Homo* is proposed as a basic type, with current members of *Australopithecus* plus what is currently labeled *Homo habilis* suggested as another extinct basic type. The species remaining within *Homo* have similar morphologies that can generally be explained as microevolution within a basic type.

Two Views of Origins

There are two fundamentally different possible causes for how humans have come to exist: blind natural processes (chance-law) or purposeful intelligent design. The two mechanisms are not wholly mutually exclusive over time, for some entities in the natural world may have come to their present forms due to some combination of chance-law and design. However, the two views stand in stark contrast to one-another as fundamentally different mechanisms for human origins.

The chance-law hypothesis, neo-Darwinism, states that humans, apes, and monkeys are related through common ancestry. This neo-Darwinian mechanism holds that humans

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arose through random mutations preserved by the law of natural selection. Intelligent design postulates that humans originated due to the intentional arrangement of biomatter--including the human genetic code--by the action of intelligence.

According to evolutionary theory, the chimpanzee is the closest living relative to humans today. Humans, apes, and monkeys are all members of the Order Primates. Evolutionists use differing schemes of classification reflecting various different perspectives on the alleged relationships of these upper primates. For this paper Hominoidea will be a superfamily containing all apes and humans, called "hominoids." Family Hominidae (called "hominids") will include humans and those extinct hominoids which are thought by evolutionists to be descendants of the last ancestor of humans that was not also an ancestor to chimpanzees.

Some proponents of intelligent design have argued that there are limits to the amount of change in genetic information possible through Darwinian processes[1] and that some groups of primates are not related through common ancestry.[2] Such proponents have proposed a new taxonomic category, the "basic type," which is a group of organisms related through ancestry that initially acquired their fundamental genetic programs through design, and not through ancestry with some other type of organism.[3] Because their genetic architecture is distinct, members of one basic type cannot interbreed to produce offspring with members of another basic type.[3] The converse is not necessarily true, as some species which cannot interbreed could be members of the same basic type.[3] Within these hypothesized basic types, there is room for limited amounts of genetic variation through microevolution.

Intelligent design theory implies that some current taxonomic categories may be defined as basic types.[3] For paleoanthropological studies, this is a difficult hypothesis to firmly test: ethical questions aside, it is impossible to play the "mating game" with extinct organisms known only from the ancient fossil record. However, borrowing from expectations of "basic type" biology, intelligent design theory predicts that basic types may appear suddenly in the fossil record some time after the design occurred, and will differ from previously existing organisms.[3, 4] As Meyer *et al.* note:

> [I]ntelligent design provides a sufficient causal explanation for the origin of large amounts of information, since we have considerable experience of intelligent agents generating informational configurations of matter.[4]

This infusion of information could be revealed in the fossil record as a "quantum or discontinuous increase in specified complexity or information."[4] Subsequent forms may exhibit limited variation of the original basic type form[3] where larger-scale morphological disparity arises before smaller-scale diversity.[4] In contrast, evolution predicts that all forms are ancestrally related, and that fossils documenting the transition from one taxonomic category to another may be found. This discussion will test the hypothesis that some groups of upper primates were intelligently designed by looking at the fossil record, and ask which, if any of these groups, belong to distinct "basic types."

Limitations of Paleoanthropological Methods, Datasets, and Studies

Before investigating the hominoid fossil record, it is important to understand the inherent limitations of all fossil studies of the origin of humans.

In 1980, the famed late paleontologist Stephen Jay Gould noted that, "[m]ost hominid fossils, even though they serve as a basis for endless speculation and elaborate storytelling, are fragments of jaws and scraps of skulls."[5] In 1986, Nobel Prize in medicine laureate Sir Peter Medawar commented that paleoanthropology is a, "humble and unexacting kind of science."[6] As late as 2001, *Nature* editor Henry Gee wrote, "[f]ossil evidence of human evolutionary history is fragmentary and open to various interpretations."[7] This scarcity of fossils makes it difficult to construct concrete interpretations, especially when it comes to ancestral relationships; it is easy to speculate under the influences from preconceptions and biases. So sparse and difficult to interpret is the data that in the judgment of Harvard zoologist Richard Lewontin, it is difficult to identify fossils that can be universally accepted as direct ancestors of the human species:

> When we consider 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.[8]

One article by Constance Holden titled, “The Politics of Paleoanthropology,” in *Science*, describes how this lack of data causes paleoanthropologists to face challenges in remaining objective because of the sheer lack of evidence and the nature of the subject of study:

> The field of paleoanthropology naturally excites interest because of our own interest in 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 disputes raging in the field.[9]

Holden goes on to analogize the methods of paleoanthropology and tells how difficulties in demonstrating fact from the data have led to long-standing conflicts and factions:

> 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 because it is so difficult to find conclusive evidence to send a theory packing.[9]

Paleoanthropology is therefore a field of with many hypotheses and few universally accepted theories among its practitioners. However, even the most established theories of human origins may still be based only upon limited and incomplete evidence which is rarely looked at from the perspective of intelligent design.

Typically there have been two schools of thought of how to classify new fossil finds. "Lumpers" tend to classify new finds into existing taxonomic groups, assuming they have found variation in a single species, while "splitters" tend to categorize new finds into new species. Even with rare complete fossils, descriptions of species should still be held tentatively. A single complete skull, a rare find in paleoanthropology, only provides one data point for an entire species and tells little about the full ranges of morphological variation, extent of sexual dimorphism, and even the species' true general form through time.[10]

Even when holding a complete understanding of morphology, it can still be difficult to predict behavior and thus determine socially advantageous traits. Karen B. Strier, studying the behavior of common chimpanzees (*Pan troglodytes*) and their sister species, the pygmy chimpanzee, or bonobo (*Pan paniscus*), found that despite nearly identical skeletal structures, there are great differences between their behaviors:

> On the sole basis of a few bones and skulls, no one would have dared to propose the dramatic behavioral differences recognized today between the bonobo and the chimpanzee.[11]

After making this observation with such a small data set (there are only a few extant great ape species to make comparisons of behavior and morphology), the author contends this should serve as, "a warning for paleontologists who are reconstructing social life from fossilized remnants of long-extinct species."[11]

Finally, many textbooks show interpretive drawings of hominids which may mislead the public to believe actually represent real data.[12] *Neanderthals* may be depicted as culturally primitive or *Homo erectus* may be portrayed as a bungling and primitive humanlike form. Ironically, the same textbook may portray an australopithecine ape as physically anthropoid, but with gleams of human-like intelligence and emotion in its eyes.[12] These reconstructions are only loosely based upon fossil evidence and provide a highly subjective evolutionary interpretation. If the hominid genera *Homo* and *Australopithecus* represent distinct basic types, then it might be improper to imply convergence of intelligence and emotional faculties between the two groups. As famed physical anthropologist Earnest A. Hooton from Harvard University cautioned in 1931, "alleged restorations of ancient types of man have very little, if any, scientific value and are likely only to mislead the public."[13]

The Fossil Record of Non-Hominid Primates

According to the standard primate phylogeny, constructed by comparing DNA sequences of living primates, the first primates were similar to lemurs and tarsiers.[14] Simians (monkeys and higher primates) are said to have evolved about 40 Ma,[14] but primate fossils from this period are rare.[15] Proposed fossil evolutionary ancestors for simians include omomyids, adapids, and even unspecified taxa belonging to fossils not yet found.[16] A review of hypotheses of simian origins by anthropologist Robert D. Martin noted that there is "little if any direct evidence for a link between omomyids and simians."[16] Martin found that many characteristics linking adapid fossils with simians are so common in mammals, and primates in particular, that they cannot serve as conclusive evidence of an evolutionary link. More importantly, adapid skulls do not document the "marked increase in relative brain size that distinguishes simians from prosimians" as well as other important simian skull characteristics.[16] Some of the earliest true simian fossils, such as *Parapithecus* (thought to be the beginning of the Old World monkey line at about 30 Ma[17]), are known only from jaw fragments.[15] Another early form, *Aegyptopithecus*, is from about 35 Ma[14] and looks very simian[16, 18] but is not closely preceded by a plausible non-simian ancestor.[16] Fossil details about the alleged evolutionary origin of simians remain "obscure."[16]

In the mid-early Miocene (15 to 20 Ma), a line of monkeys supposedly evolved into early hominoid apes. In the mid-Miocene (~12 Ma) a number of now-extinct species called the *Dryopithecines* appear rapidly in the fossil record, the earliest species of which bear a resemblance to modern apes. One fossil, *Proconsul*, is similar to hominoids "on the basis of a few postcranial features"[19] but also has a longer monkey-like trunk. This fossil could be a called a candidate as a transition between monkeys and apes.

The primate phylogeny[14] states that these early apes evolved into the first hominids, and also into modern apes, but Henry Gee notes that fossils documenting these transitions are conspicuously absent.[20] Although woodland-dwelling hominoid fossils have been found,[6, 10] fossils detailing the alleged evolution of all extant African apes and orangutans are also non-existent.[19, 21] In light of the fossil record, it seems likely that the first simians and early hominoids are members of basic types distinct from both lower primates and living apes. Modern apes may represent at least one basic type. Cross-breeding and genetic experiments could help begin to determine the extent to which further basic types exist among extant ape genera.

Early Hominid Fossils and Taxonomy

According to evolutionary theory, humans are descended from an ancestor they shared with chimpanzees. As noted, there is no fossil evidence of the supposed evolutionary ancestors of chimpanzees and other extant hominoids. However, there are some fossils of "hominids" which some paleoanthropologists believe represent very close relatives or direct ancestors of humans. The vast majority of hominid fossils have been divided into two basic categories: those of the genus *Australopithecus* and those of the genus *Homo*.

There are no fossils connecting the *Dryopithecines,* through an evolutionary sequence, to the first fossil hominids,[18, 20] which appear in the fossil record between 5-6 Ma.[6] The earliest proposed hominids are *Ramapithecus*[18, 22] and *Ardipithecus ramidus*.[22, 23, 24] However, Roger Lewin says that *Ramapithecus* is known only from a few jaw fragments, and today is thought to be "simply only one of many early apes," unrelated to hominid origins.[22] *A. ramidus* is considered by some to be the first known hominid (ramidus is the Ethiopian word for "root"). Because of its fragmented remains, it has been called a hominid primarily on the basis of some of its teeth;[25] its status as a fully bipedal hominid remains unclear.[7, 23] Paleoanthropologist Tim White has called the record of hominids from this period, "a black hole in the fossil record" and said that although a more complete, though unpublished skeleton of *A. ramidus* has been found, the bones are "soft … crushed ... squished, … [and] chalky,"[23] which could leave future claims open to interpretation. Paleontologist Steven Stanley notes that, "the latest Miocene and very earliest Pliocene (the period from about eight to four million years ago) has revealed little of the assumed transition [from Miocene apes]… to the australopithecines."[18]

Many paleoanthropologists believe that the first true hominids were bipedal, however they have found it difficult to explain the evolutionary advantage of bipedal locomotion. Bipedalism has been called a less efficient mode of locomotion than the quadrupedal mode of locomotion found in the alleged precursors of bipedal hominids.[26] Indeed, functional advantages held by primates with transitional stages of locomotion seem difficult to imagine. The presence of early woodland-dwelling bipedal hominids[27, 28] casts doubt upon a previously popular hypothesis that bipedalism evolved because it provided an advantage to apes which could carry things with their hands in the open African savanna.[29] This calls the "savanna hypothesis" into question. Given the lack of evidence documenting a transition from *Dryopithecines* to hominids, "hominids" may be a distinct in their ancestry from earlier hominoids.

Australopithecines are a genus of extinct hominids that lived in eastern Africa from about 4.2 Ma until about 1 Ma.[22, 27] Some evolutionists think some australopithecine species may be directly ancestral to humans (see Figure 1), however it has also been argued that they are a "side-branch" of the line that led to humans, and not direct human ancestors.[30] “Splitters” and “lumpers” have created a variety of taxonomic schemes for the australopithecines, however the four most commonly accepted species are *A. afarensis*, *A. africanus*, *A. robustus*, and *A. boisei*.[31] *A. robustus* and *A. boisei* are larger boned and more “robust” than *A. afarensis* and *A. africanus*, which are termed "gracile." The smaller gracile forms *A. africanus* and *A. afarensis* (the species which includes the famous fossil “Lucy") are typically thought by evolutionists to be the most closely related to humans, despite the fact that the some of the earliest forms of *Homo* were actually robust and these hypotheses do not maximize parimony.[22] One recent study found that *A. africanus* (very similar to *A. afarensis*), the australopithecine species often thought to be the most closely related to humans, had a body shape more similar to modern apes than to members of the genus *Homo*.[32]

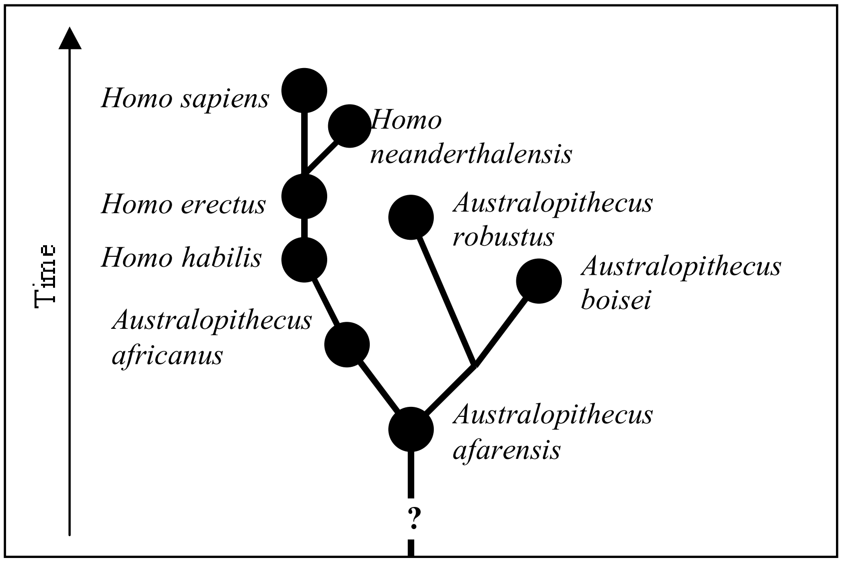

Figure 1. A typical hominid phylogeny under evolutionary theory. Adapted from *Biology: The Dynamics of Life* (reference 12). Dates have been excluded to show general hypotheses about ancestry between *Australopithecus* and *Homo*. Many hominid phylogenies place *Australopithecus afarensis* arising from the hominid *Ardipithicus ramidus* a little over 4 million years ago.

Australopithecines stood about 1-1.5 m in height and had relatively small brains typically measuring between 370 and 515 cubic cm (cc)[33, 34]--a range that extends only slightly larger than the brain size of the chimpanzee (see Table 2). One study using computer tomography found that estimates of the cranial capacity of many of these ancient fossil skulls may be over-inflated.[34] Though there are fossils creating a general grade of increasing skull sizes from *Australopithecus* into modern *Homo*, the fossil record indicates that about 2 Ma, skull sizes began a "dramatic trajectory" that ultimately resulted in an "approximate doubling in brain size."[33] This "rapid evolution" is not uncommon with regards to the origins of characteristics of the genus *Homo*.

The australopithecine mode of locomotion has been a point of controversy, usually centered around the shape of australopithecine pelvis and knee bones. This may be a case where paleoanthropologists desired an upright walking, but small-brained ape-like creature because it would fit well with theories of human evolution. Indeed, C. E. Oxnard commented in an article in *Nature* that, "it is perhaps inevitable that, believing [australopithecine] relationships to man to be rather close, those particular features in which the postcranial [australopithecine] bones resemble man are most emphasized."[30] Oxnard goes on to point out that reconstructions from fossils are often inexact, allowing for preconceptions to lead to plausible, though incorrect conclusions:

> A series of associated foot bones from Olduvai [a locality bearing australopithecine fossils] has been reconstructed into a form closely resembling the human foot today although a similarly incomplete foot of a chimpanzee may also be reconstructed in such a manner.[30]

Using multivariate statistical analysis, Oxnard compared 11 key australopithecine skeletal characteristics to extant hominoids and found they were either unique or most similar to the orangutan.[35] Oxnard concluded that the australopithecine mode of locomotion was most similar to that of the modern orangutan.[35]

Though Oxnard wrote in the 1970's, and himself has not been without many critics, the debate over the australopithecine mode of locomotion has not ended. Even in the evolutionist paleoanthropology community, bipedality is no longer seen as a characteristic necessarily qualifying a species as a hominid, ancestral to humans.[23] In the Miocene, many bipedal apes lived, and went extinct, and are thought to have evolved bipedality independent from the line that led to human bipedality.[23]

Early studies believed the australopithecine pelvis was a clear-cut precursor to *Homo*-like bipedality,[36] while many later studies of australopithecine locomotion found it to be different from that of modern apes, but also very different from that of humans--a distinct mode of locomotion. A recent study by an evolutionist found sharp differences between the pelvic bones of australopithecines and *Homo*, and, lacking fossils of intermediate morphology, proposed a period of "very rapid evolution corresponding to the emergence of the genus *Homo*."[37] Other recent studies have found that the handbones of Lucy are similar to those of a knucklewalking ape,[38, 39] and that australopithecine inner ear canals, responsible for balance and related to locomotion, resemble small inner-ear canals of the great apes rather than larger canals found in humans and other members of the genus

Homo.[40] The most common consensus is that forms of australopithecines were adapted for both tree-climbing and at least semi-upright walking,[32, 41] having a mode of bipedal locomotion different from humans and non-hominid apes.[42] Their ape-like developmental patterns[43] and ability for ape-like prehensile grasping with their toes[44] led one reviewer to say that ecologically speaking, australopithecines "may still be considered as apes."[28] Harvard paleoanthropologist William Howells mentioned that the arboreal bipedalism of Lucy was "successful in serving Lucy's purposes," but "not something simply transitional"[42] to the locomotion of modern humans. These are important clues as to whether or not australopithecines were fully bipedal hominids and clearly ancestral to humans.

Given the distinctive qualities of australopithecines, and the fact that their postcranial skeleton more closely resembles modern apes than modern humans,[32] it does not seem unreasonable to infer that they could be a designed basic type unrelated to *Homo*. However, in order to strengthen this distinction, it remains to be seen if there are taxa linking *Australopithecus* to *Homo* from the fossil record.

Comparisons of *Homo* and the australopithecines

Similar to *Australopithecus*, the genus *Homo* has a number of different taxonomic schemes. A review in 1999 by paleoanthropologists Bernard Wood and Mark Collard[32] tried to address the question of how to define the genus *Homo*. After noting that researchers sometimes assign different "hypodigms" (the actual fossils classified under a taxonomic group) to various hominid taxa, Wood and Collard found it difficult to develop satisfactory criteria to demarcate which fossils belong *Homo*. Typically there are at least three major species—*H. habilis*, *H. erectus*, and *H. sapiens* (which includes modern humans), which most evolutionists believe are sequentially related, in that order. Researchers have proposed different "hypodigms" from lumping all *Homo* fossils under a single species, *H. sapiens*, to employing the aforementioned species and any or all of *H. neanderthalensis* (also classified under *H. sapiens*), *H. heidelbergensis* (a variant of *H. neanderthalensis*), *H. ergaster* (a sister taxa to *H. erectus)*, and *H. rudolfensis* (otherwise usually classified as *H. habilis*). Wood and Collard found that the most common tests have required that a *Homo* specimen meet any one of four criteria:

1) Cranial capacity of at least 600 cc indicating higher intelligence
2) Possession of language, as inferred from brain morphology and endocranial casts
3) Well-developed opposable thumb
4) Usage of stone tools

In Wood and Collard's review, criteria 1 and 2 were rejected because language ability and intelligence have been found to not necessarily correlate with brain size. This is probably because internal brain organization is much more complex and important for determining intelligence than is the sole dimension of brain size.[45] This observation seems to call into question the evolutionary importance of the few skulls of intermediate size between *Australopithecus* and *Homo* (Table 1). Criteria 3 and 4 were found to be problematic because these characteristics have been found in groups clearly not belonging to *Homo* and are difficult to establish through the fossil and archaeological records. Indeed, after the publication of Wood and Collard's article, stone tools were described in modern sites made by chimpanzees.[46]

Wood and Collard go on to suggest a method of defining *Homo* using cladistic analysis to statistically group fossils together according to their similarities and differences. While cladistic analyses are tailored to produce phylogenetic relationships, their methods can also serve as a general test of the morphological similarity of fossils, apart from questions over origins and ancestry. The review concludes that, "the genus *Homo* does not satisfy the condition that the fossil species within it unequivocally form a monophyletic group with *H. sapiens* to the exclusion of the australopiths." In other words, there are some taxa currently within *Homo* which are better classified under a different genus.

One fossil species claimed as having an intermediate morphology between *Australopithecus* and *Homo* is *Homo habilis*.[14, 18, 47, 48, 49, 50, 51, 52] Despite controversy over fossil dates, *H. habilis*, is also often claimed as the earliest member of *Homo*. It is said to document brain enlargement, the first usage of primitive stone tools, and the origin of a humanlike bipedal gait.[47] *H. habilis* remains were first discovered in 1960, and were named in 1964 by famous paleoanthropologist Richard Leakey, and his team.[31, 47] While it is generally accepted that there exists a species, *habilis,* distinct from *H. erectus* and other australopithecine species, a long-standing controversy has existed over whether or not *H. habilis* is a single species with wide ranges of morphology (preferred by "lumpers"), or if the fossils assigned to *H. habilis* represent multiple species, and some *H. habilis* fossils should reassigned to other species.[47] Indeed, one paleontologist called it a "wastebasket taxon"[53] due to the "motley" bone assortment attributed to it. The most complete specimens are only two very fragmented skeletons.[31]

A study of one of the fragmented specimens compared the post-cranial body of *H. habilis* to that of "Lucy," supposedly a likely australopithecine precursor of *H. habilis*.[54] The study found that *H. habilis* was in 24 out of 28 test characteristics more similar to modern African apes than it was to other members of *Homo*. Given that the skeleton was placed in the genus *Homo*, these results were called by one of the authors, "unexpected in view of previous accounts of *Homo habilis* as a link between australopithecines and humans."[2] Similarly, the aforementioned cladistic analysis of Wood and Collard found that *H. habilis* actually has body proportions more similar to the australopiths than to other members of *Homo.*[32] The study found that the mode of locomotion of *H. habilis* was best classified as "terrestrial bipedalism with an ability to climb proficiently," and grouped it with the australopithecines. *H. habilis* was found to be australopithecine in all of its major characteristics—body size, body shape, locomotion, jaws and teeth, development, and brain size (see Table 1). Finally, an analysis of the ear canals, indicative of the mode of locomotion, found that a *habilis* skull is most similar to cercopithecoids (baboons), suggesting it "relied less on bipedal behaviour than the australopithecines."[40] These observations strengthen the case that *H. habilis* is not a species of intermediate morphology between australopithecines to *Homo*, as this ape-like species has no reliable criteria connecting it to modern humans, or as a link between australopithecines and modern humans.

As discussed, skull size and tool usage do not necessarily indicate high intelligence or *Homo*-like behavior. If the morphological characteristics of *H. habilis* are indeed best

Table 1. Reconstruction of Table 7 from Wood and Collard (1999).[32]

Species name	Body size	Body shape	Locomotion	Jaws, teeth	Development	Brain-size
H. rudolfensis	?	?	?	A	A	A
H. habilis	A	A	A	A	A	A
H. ergaster	H	H	H	H	H	A
H. erectus	H	?	H	H	H	I
H. heidelbergensis	H	?	H	H	?	H
H. neanderthalensis	H	H	H	H	H	H

"H" demarcates modern human-like; "A" indicates australopith-like; "I" indicates intermediate between australopith-like and modern human-like. The question mark (?) indicates data which was unavailable according to the study.

classified as australopithecine, and are more similar to modern apes than to humans, then many traditionally accepted taxonomic schemes which classify *habilis* as a member of *Homo* must be rejected. After removing *habilis* from the genus *Homo*, the earliest known representative of *Homo* becomes *H. erectus* (dated as early as 1.9 Ma[32]). However, even if *habilis*, as an australopithecine, bears the closest resemblance to members of the genus *Homo*, it cannot be a transition to *Homo* because it appears about the same time as the other earliest members of *Homo*, and most *habilis* specimens post-date the appearance of *Homo*.[55]

After removing *habilis* from *Homo*, transitional morphology between *Australopithecus* and *Homo* would seem, according to Wood and Collard, to be very rare. Of the 6 characteristics analyzed in table 1, only one was found to be transitional between *Homo* and *Australopithecus*: brain-size. *H. erectus* is said to have intermediate brain size, and *H. ergaster* has a *Homo*-like postcranial skeleton with a smaller more australopithecine-like brain size. However, as previously noted, Wood and Collard contend that brain-size is not necessarily the best way to measure intelligence or language ability in their own study. If brain-size is less important, then there seems to be a substantive transitionless break between the morphology of the members of *Homo* and the members of *Australopithecus*.

Studies from evolutionists following Wood and Collard in recognizing *habilis* as an australopithecine found that there is a distinct break between the morphology of the earliest members of *Homo* and the latest members of *Australopithecus*. Hawks *et al.* note that *Homo* and *Australopithecus* differ significantly from one another in brain size, dental function, increased cranial buttressing, expanded body height, visual, and respiratory changes.[55, 56] Hawks *et al.* see these differences as dramatic*:*

> We, like many others, interpret the anatomical evidence to show that early *H. sapiens* [*H. erectus* and *H. ergaster*] was significantly and dramatically different from earlier and penecontemporary australopithecines in virtually every element of its skeleton and every remnant of its behavior.[55]

Noting these many changes, Hawks *et al.* view the evolutionary origin of humans as reflecting "a real acceleration of evolutionary change from the more slowly changing pace of australopithecine evolution."[55] In their genetic study, Hawks *et al.* note that this transformation must have included radical changes in body form that deviated from any earlier evolutionary trends:

> The anatomy of the earliest H. sapiens [*H. erectus* and *H. ergaster*] sample indicates significant modifications of the ancestral genome and is not simply an extension of evolutionary trends in an earlier australopithecine lineage throughout the Pliocene. In fact, its combination of features never appears earlier...[55]

These rapid, unique, and genetically significant changes are termed "a genetic revolution" where "no australopithecine species is obviously transitional."[55] One commentator proposed this evidence implies a "big bang theory" of human evolution.[57]

Although Hawks *et al.* explain the origin of *Homo* as an extreme population bottleneck during a speciation event, the evidence may fit the criteria for inferring intelligent design. While the punctuated equilibria model does predict that transitional forms are not to always be expected, it cannot be denied that there is nonetheless a significant unbridged morphological gap between *Homo* and *Australopithecus*. Furthermore, the data may match exactly that predicted by an intelligent design model. Given the apparent very rapid large genetic changes that occurred during the origin of *Homo*, one might conclude that, from an intelligent design perspective, the "big bang" origin of *Homo* represents the exact kind of discontinuous, mass-infusion of genetic information into the biosphere expected if the genus *Homo* was intelligently designed apart from relation to *Australopithecus*.

Homo **as a basic type**

Organisms which are reproductively compatible are said to be members of the same basic type.[3] Famed paleoanthropologist Donald Johanson speculated that were *H. erectus* alive today, that they could reproduce with modern humans.[21] Others have even suggested that given range of variation within the human species, it is not unreasonable to assume that *H. erectus* could be a member of our modern human species, *H. sapiens*.[58] Though the postcranial skeleton of *Homo erectus* is poorly understood, known remains are consistent with a modern human mode of locomotion.[32] Furthermore, *H. ergaster* (an early form often classified under *H. erectus*) was found with a nearly complete skeleton and is more similar to modern humans than to the australopiths.[32] Indeed, in contrast to the australopithecines and *habilis*, *H. erectus* is the "earliest species to demonstrate the modern human semicircular canal morphology,"[40] previously noted as a feature indicative of the mode of locomotion. Another study found that total energy expenditure (TEE), a complex characteristic correlated with body size, diet quality, and likely food-gathering activity, "increased substantially in *Homo erectus* relative to the earlier australopithecines," thus beginning to approach the very high TEE value of modern humans.[59] Indeed, some authors have even referred to *H. erectus* and *H. ergaster* as "early *Homo sapiens.*"[55, 60]

Wood and Collard found that *H. ergaster* and *H. erectus* had cranial capacities of intermediate size (see Table 1), however, fully functional modern humans have a very wide spread of cranial capacities including brain sizes from 700 to 2200 cc.[61] Not only is cranial capacity of uncertain importance for determining intelligence,[45] but morphologically, *ergaster* and *erectus* do have average skulls sizes well within the range of modern human variation, in contrast with *habilis* (see Table 2). Indeed some *erectus* skulls have been found to be as large as 1250 cc[62]--within the "normal" range for normal modern humans.[14] More importantly, *H. erectus* remains have been found associated with signs of culture[63] and contemporary with modern humans.[64]

Table 2. Cranial capacities of some extant and extinct hominoids.

Taxon	Cranial Capacities (with reference)
Gorilla (*Gorilla gorilla*)	340 - 752 cc (62)
Chimpanzee (*Pan troglodytes)*	275 - 500 cc (62)
Australopithecus	370 - 515 cc (33, 34)
Homo habilis	Avg 552 cc (32)
Homo ergaster	Avg 854 cc (32)
Homo erectus	850 - 1250 cc (62)
Homo neanderthalensis	1100 - 1700 cc (62)
Homo sapiens (modern man)	700 - 2200 cc (61)

After *H. erectus,* later members of *Homo* such as *H. neanderthalensis* are even more humanlike. Though many regard Neanderthals as an evolutionary "dead end" that is not ancestral to our species, Neanderthals have been called a possible "race" of our own species[10] as their body shapes are within the range of modern human variation.[32] Neanderthal remains have with been found associated with signs of very high culture[65, 66] including art,[65] burial of their dead,[67] and technology including the usage of complex tools,[65, 66] and chain-mail armor.[68] The finding of a modern-humanlike Middle Palaeolithic hyoid implies that they may have had modern human-like language capabilities.[69] "Morphological mosaics" indicate Neanderthals probably did interbreed with modern humans.[65] These similarities make mating compatibility between *H. erectus* and *H. neanderthalensis* with modern humans a strong possibility.

Regardless of the preferred categories and hypodigms of paleoanthropologists, *H. neanderthalensis* and *H. erectus* differences from *Homo sapiens sapiens* (modern humans) are real, but most can generally be explained as microevolutionary effects of “size variation, climatic stress, genetic drift and differential expression of [common] genes,”[2] leading paleoanthropologist Sigrid Hartwig-Scherer to classify these species together as members of a distinct basic type. Thus, *H. erectus*, *H. ergaster, H. heidelbergensis, H. neanderthalensis*, and *H. sapiens* are reiterated here as members of a separately designed basic type: *Homo* (Figure 2). Following Wood and Collard[32] and others,[55] fossils now classified as *H. habilis* and *H. rudolfensis* are probably better classified under the genus *Australopithecus.* Following Hawks *et al.*, the origin of humans represents rapid and significant genetic changes among hominid populations, reflecting the very, "quantum or discontinuous increase in specified complexity or information"[4] stated by Meyer *et al.* as an indication of origin through design. This seems to satisfy the condition for safely concluding a basic type from fossil evidence: the alleged australopith precursors are very different from the earliest members of *Homo*, *Homo* appears suddenly and distinct in the fossil record from any earlier forms, and subsequent forms of *Homo* are variants of and very similar to the initial forms of *Homo*.

It should be noted that this review has focused primarily upon fossil evidence. One might argue that genetic junk sequences shared by humans and other primate genomes provides conclusive evidence of a non-designed naturalistic origin of the *Homo* genome. Indeed, Hawks *et al.* relied upon shared *Alu* sequences in their discussion of the history of *Homo.*[55] However, given that different types of functionality have recently been discovered for *Alu* sequences,[70, 71] and that functionality is increasingly being discovered for other types of "junk-DNA,"[72] it is possible that many "junk-DNA" sequences may no longer be safely considered homologous under a definition for homology as "detailed similarity of organization that is functionally unnecessary."[73] This implies it is inappropriate to use such "junk" sequences to argue for a naturalistic common ancestry of primates over a designed history of primate genomes. Though functions for all types of DNA may have not yet been discovered, increasing discoveries of functionality for "junk-DNA" and trends away from "junk" encourage a "wait-and-see" approach to "junk-DNA." This author proposes that supposed "junk-DNA" be used only very tentatively to argue for evolutionary origin of the genome, given that functionality is being increasingly discovered for many types of DNA.

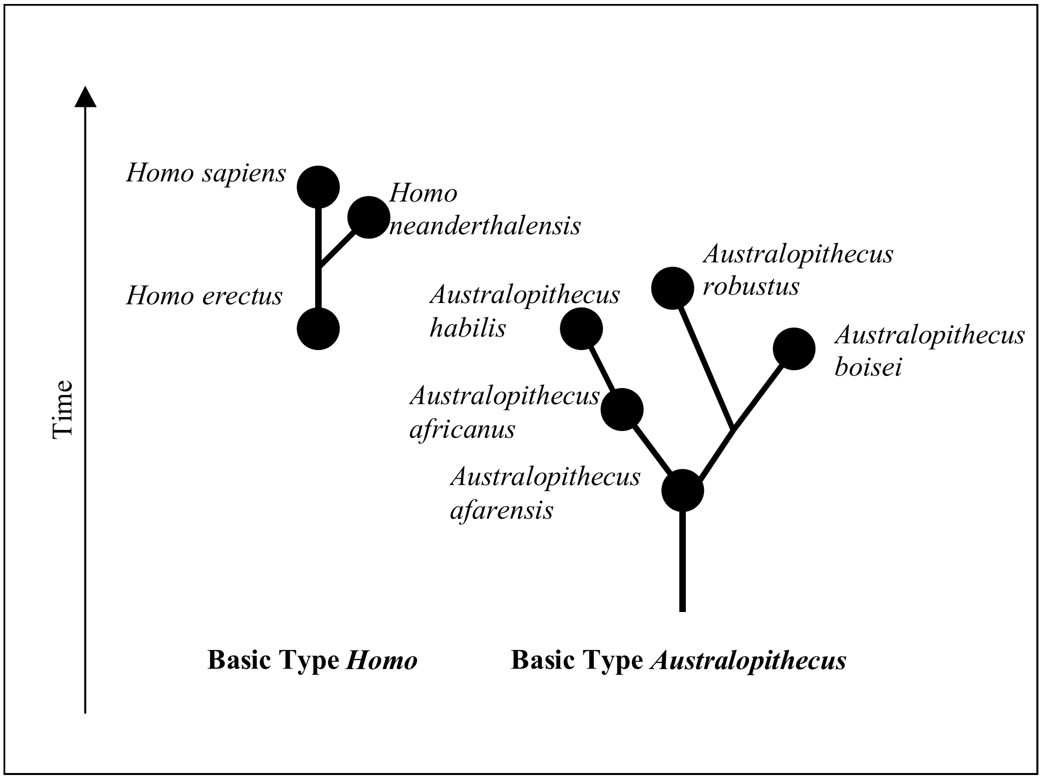

Figure 2: Hominid phylogeny under intelligent design theory, reflecting basic types among hominids. Dates have been left off so as not to detract from the primary point of this paper: phylogenetic relationships.

The Future of the *Homo sapiens*

Paleoanthropology cannot help but address fundamental philosophical, religious, metaphysical questions, as its findings have a bearing on humanity's place in nature, "in more than just the physical sense."[22] Intelligent design theory postulates that humans exist on Earth because of the will, intention and purpose of a designer. This stands in direct contrast to neo-Darwinism, which sees our existence as "a mere accident."[74] The famous paleontologist George Gaylord Simpson said in his book *The Meaning of Evolution*, that under evolution, "[m]an is the result of purposeless and natural processes that did not have him in mind."[75] Harvard paleoanthropologist William Howells, attributing our existence to the aforementioned "savanna hypothesis," discusses how under evolution, mere chance circumstances are what created our species:

> Here, we see again the role of happenstance in evolution. In this case there was no giant calamity such as felled the great reptiles, only a simple
>
> **?**
>
> displacement out of a groove. Had our ancestors gone on in forests, we may suppose that nothing would have happened; they would not have turned into bipeds; we would not be here. It did not have to happen.[42]

Design and evolution stand in contradistinction with regards to the nature of human origins, and questions over design and evolution may have a strong bearing upon the future development of the human species. If intelligent design is a cause involved in the origin of humans, this could have profound implications for our understanding of our species.

Acknowledgments:
I would like to thank Ryan Huxley, Dr. David Redelings, and Patrick Redelings for their help and advice in discussing and editing this paper. I'd also like to thank Micah Sparacio for his patience with me in submitting this paper, and also William Dembski for helping initiate the early stages of this project.

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