Intelligent Design and Evolution Awareness Center

Human Origins and Intelligent Design

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Two Different Views of Origins

There are two fundamentally different causes for human origins: blind natural processes (chance-law) or purposeful intelligent design. The chance-law hypothesis, neo-Darwinian evolution, states that humans arose through random mutations preserved by blind natural selection. Thus 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."[1] On the other hand, intelligent design theory postulates that humans originated due to the intentional arrangement of biomatter--including the human genetic code--by an intelligent agent. Under intelligent design, humans exist because an intelligent being *did "*have them in mind."

Figure 1. Paleoanthropology is a field dominated by evolutionary thinking—but what contributions can the fledgling theory of intelligent design make to questions over human origins?

Can we detect intelligent design from the fossil record?

One thing we know about intelligent agents is that their complex designs tend to contain large amounts of specified and complex information. Thus, they can rapidly infuse large amounts of genetic information into the biosphere. If this took place in the past, it would be reflected in the fossil record as the abrupt appearance of new fossil forms without similar precursors. Thus, when we find the rapid appearance new fossil forms, which lack transitions from previous different fossil forms, we may infer intelligent design.

Also, designers often re-use basic designs that work, with slight variations. For example, in the parking lot of a mall and you'll likely see dozens of cars built upon a similar body design, with slight variations and differences. Similarly, members of a "basic type", represent a group of similar and related species which acquired their genetic programming through intelligent design, and not through common descent.[3] Like the car example, members of a basic type are fundamentally similar, but have undergone minor changes through microevolution. These observations can also be built into our understanding of intelligent design.

From our understanding of "basic type" biology, the following could be predictions of intelligent design:

1) Members of a basic type appear suddenly and distinct, without transitions in the fossil record from earlier forms
2) Subsequent forms the basic type are variants of, and very similar to, the initial fossil forms.

a) b) c)

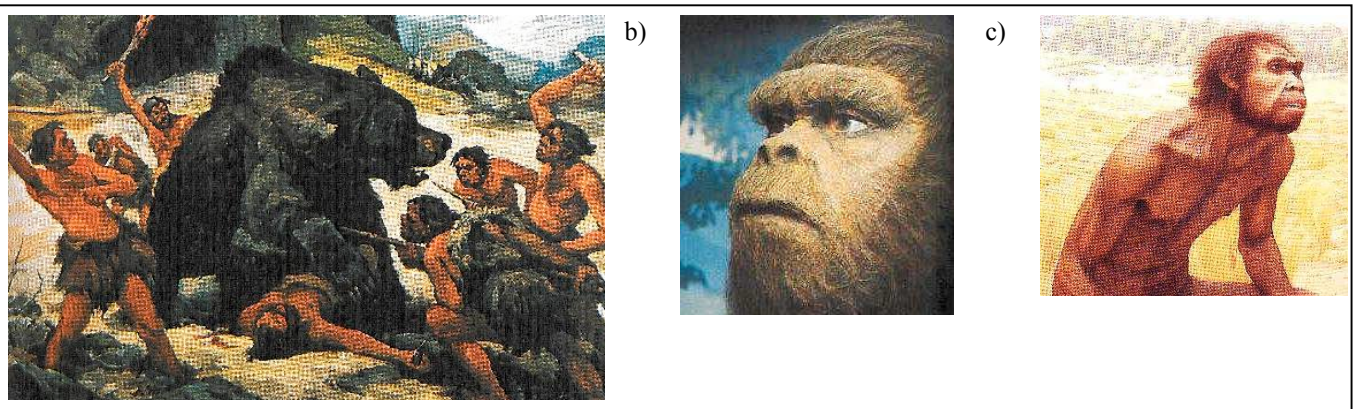

Figure 2. Textbook reconstructions of hominid fossils from the textbook *Biology: The Dynamics of Life*.[8] A) Neanderthals are depicted as culturally primitive as they struggle to kill a large bear near a cave dwelling. However, as explained later, Neanderthals probably had an intelligence like our own and have been found associated with high technology and culture. B) An australopithecine with gleams of high intelligence in its eyes, despite the fact that its brain was only slightly larger than that of a chimpanzee (see Table 1). C) *Homo erectus* portrayed as stooped and unintelligent, though *erectus* walked completely upright (the name *Homo erectus* means "upright man") and had a brain size within the range of modern human variation.

Some Limitations of Paleoanthropology

In 1980 the 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".[4] More recently, *Nature* editor Henry Gee wrote, "[f]ossil evidence of human evolutionary history is fragmentary and open to various interpretations."[5] The scarcity of data makes it difficult to confirm how, or even if extinct fossil species are related, and makes it easy to speculate under the influences from preconceptions and biases. Harvard zoologist Richard Lewontin explains:

> *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.*[6]

A *Science* article entitled, "The Politics of Paleoanthropology," 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.*[7]

Paleoanthropology is a field where theories may be based only upon limited and incomplete evidence, which is rarely examined through intelligent design.

Many textbooks show interpretive drawings of hominids which may mislead the public to believe actually represent real data (see Figure 2).[8] These reconstructions are only loosely based upon fossil evidence and often provide only a highly subjective evolutionary interpretation. 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."[9]

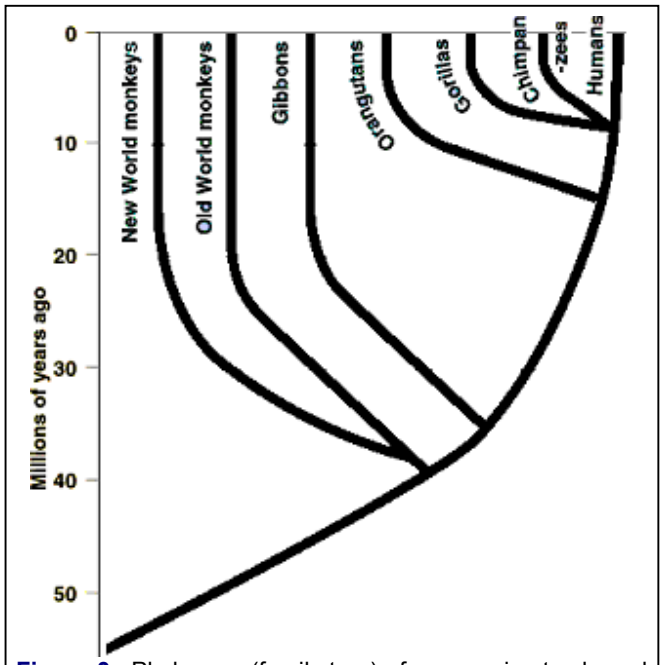

Figure 3. Phylogeny (family tree) of upper primates based upon comparison of DNA sequences (reference 11).

The Australopithecines

Humans, apes, and monkeys are members of the Order Primates. Under evolution, all primates are related and the chimpanzee is the closest living relative to humans, and humans are descended from a common ancestor they shared with chimpanzees (see Figure 3). There is essentially no fossil evidence of the supposed evolutionary ancestors of chimpanzees and other living apes,[2] however there are some species believed by evolutionists to be ancestors, or close relatives of the ancestors of humans. The majority of "hominid" fossils have been divided into two taxonomic categories: the genus *Australopithecus* and the genus *Homo* (which includes our species, *Homo sapiens*).

Figure 4. Many east African countries have yielded famous hominid fossils.

Australopithecines (literally meaning "southern ape") are a genus of extinct hominids that lived in eastern Africa (see Figure 4) from about 4.2 million years ago (Ma) until about 1 Ma.[10] Some evolutionists think they are ancestral to humans (see Figure 9), however it has also been argued they are a "side-branch" of the line that led to humans, and not direct human ancestors.[12]

The four most common species are *Australopithecus afarensis*, *Australopithecus africanus*, *Australopithecus robustus*, and *Australopithecus boisei*.[13] The two smaller and "gracile" forms, *africanus* and *afarensis* (the species which includes the famous fossil "Lucy", see Figure 5) are thought by evolutionists to be those most closely related to humans (see Figure 9).

Figure 5. The remains of the famous australopithecine fossil, "Lucy"

Australopithecines stood about 1-1.5 m in height and had relatively small brains between 370 and 515 cubic cm (cc)[14, 15]--a range that extends only slightly beyond the brain size of a chimpanzee (see Table 1). 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."[14] 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. Many evolutionists believe they were "bipedal" (i.e. walked on two legs). Early studies thought the pelvis of australopithecines was a clear-cut precursor to *Homo*-like bipedality,[16] 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.[12, 17] One study found sharp differences between the pelvic bones of australopithecines and *Homo*, and, lacking intermediate fossils, proposed a period of "very rapid evolution corresponding to the emergence of the genus *Homo*."[18] Other recent studies have found that the handbones of Lucy are similar to those of a knucklewalking ape,[19, 20] and that their 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*.[21] The most common consensus is that australopithecines were adapted for both tree-climbing and at least semi-upright walking,[25] walking differently from humans and living apes.[50]

However, australopithecines were apes and were very different from humans. One reviewer said that ecologically speaking, australopithecines "may still be considered as apes."[23] Harvard paleoanthropologist William Howells mentioned that the arboreal bipedalism of Lucy was "successful in serving Lucy's purposes," but "not something simply transitional"[50] to the locomotion of modern humans. These are important clues as to whether or not australopithecines were fully bipedal hominids and ancestral to humans.

It is difficult to connect the australopithecine fossils with any previous fossil primates. Paleoanthropologist Tim White called the early record of hominids "a black hole in the fossil record."[22] 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 … to the australopithecines."[24] One recent study found that *Australopithecus africanus* (similar to *Australopithecus afarensis*), had a body shape more similar to modern apes than to members of *Homo*.[25] Given the distinct qualities of australopithecines and the fact that their skeleton resembled modern apes than modern humans,[25] it does not seem unreasonable to infer that they could be a designed basic type unrelated to *Homo*. To strengthen this claim, it remains to be seen if there are species linking *Australopithecus* to *Homo* from the fossil record.

Table 1. Cranial Capacities (with reference).

Taxon	Cranial Capacities
Gorilla (*Gorilla gorilla*)	340 - 752 cc (ref 38)
Chimpanzee (*Pan troglodytes)*	275 - 500 cc (ref 38)
Australopithecus	370 - 515 cc (refs 14, 15)
Homo habilis	Avg 552 cc (ref 25)
Homo ergaster	Avg 854 cc (ref 25)
Homo erectus	850 - 1250 cc (ref 38)
Homo neanderthalensis	1100 - 1700 cc (ref 38)
Homo sapiens (modern man)	700 - 2200 cc (ref 37)

Is there a Link between *Homo* and *Australopithecus*?

Similar to *Australopithecus*, the genus *Homo* has a number of different taxonomic schemes. There three most commonly used species include *Homo habilis*, *Homo erectus*, and *Homo sapiens*, which most evolutionists believe are sequentially related, in that order. But there is disagreement. Some "lump" all *Homo* fossils under a single species, *Homo sapiens*, while others employ the aforementioned species and *Homo neanderthalensis* (also classified under *Homo sapiens*), *Homo heidelbergensis* (a variant of *Homo neanderthalensis*), *Homo ergaster* (similar to *Homo erectus*), and *Homo rudolfensis* (otherwise classified as *Homo habilis*).

One fossil claimed as an intermediate between *Australopithecus* and *Homo* is *Homo habilis* (see Figure 6).[11, 26] *Homo habilis* remains were first discovered in 1960, and were named in 1964 by famous paleoanthropologist Richard Leakey, and his team.[13, 26] Despite controversy over fossil dates, *habilis*, is also often claimed as the earliest member of *Homo*. *Homo habilis* It is said to show brain enlargement, the first usage of primitive stone tools, and the origin of a humanlike bipedal pelvic gait.[26] While it is generally accepted that *Homo habilis* is a real species, one paleontologist called it a "wastebasket taxon"[27] due to the "motley" bone assortment attributed to it. The most complete specimens are only two very fragmented skeletons.[13]

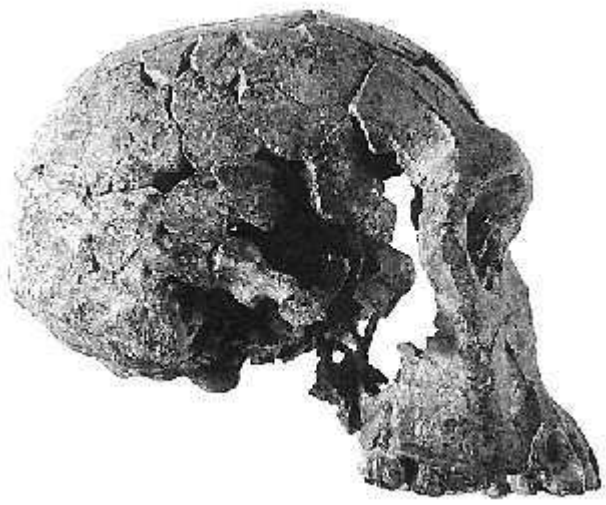

Figure 6. KNM-ER 1813, a skull commonly attributed to *Homo habilis*. With a cranial capacity of 510 cc, it is about the size of a large-brained australopithecine. Picture from http://www.talkorigins.org/faqs/homs/1813.jpg.

A study of one of the fragmented specimens compared the post-cranial skeleton of *habilis* to that of Lucy, supposedly an australopithecine precursor to *Homo habilis*.[28] The study found that *Homo 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."[29]

A similar analysis by paleoanthropologists Bernard Wood and Mark Collard found that *H. habilis* has body proportions more similar to the australopiths than to *Homo*.[25] The study found that the mode of locomotion of *Homo habilis* was "terrestrial bipedalism with an ability to climb proficiently," and grouped it with the australopithecines. *Homo habilis* was found to be australopithecine in all of its major characteristics—body size, body shape, locomotion, jaws and teeth, development, and brain size. 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."[21] This strengthens the case that *Homo habilis* is not a species of intermediate morphology between australopithecines and *Homo*, as it lacks reliable criteria connecting it to modern humans, or establishing it as a link between australopithecines and *Homo*.

After removing *habilis* from the genus *Homo*, the earliest known member of *Homo* becomes *Homo erectus* (dated as early as 1.9 Ma[25]). Even if *habilis* did bear a close resemblance to the genus *Homo*, it could not be a transition because it appears about the same time as the earliest members of *Homo*, and most *habilis* specimens post-date the appearance of *Homo*.[30]

Fossil forms with features transitional between *Australopithecus* and *Homo* are, according to Wood and Collard, very rare. They analyzed 6 characteristics of hominids, and only one was found to be transitional between *Homo* and *Australopithecus*: brain-size. But what does brain size prove? Some have contended that brain-size is not event necessarily a good way to measure intelligence or language ability because internal brain organization is much more complex and important for determining intelligence than is the sole dimension of brain size.[31] If brain-size is less important, then there seems to be a transitionless break between the morphology of the members of *Homo* and the members of *Australopithecus*.

A "Big Bang" origin of Homo

One study in the *Journal of Molecular Biology and Evolution* found that *Homo* and *Australopithecus* differ significantly in brain size, dental function, increased cranial buttressing, expanded body height, visual, and respiratory changes (see Figure 7):[30, 32]

> *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 … australopithecines in virtually every element of its skeleton and every remnant of its behavior.*[30]

Noting these many changes, the study called the evolutionary origin of humans, "a real acceleration of evolutionary change from the more slowly changing pace of australopithecine evolution"[30] and noted that this transformation must have included radical changes:

> *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...*[30]

These rapid, unique, and genetically significant changes are termed "a genetic revolution" where "no australopithecine species is obviously transitional."[30] One commentator proposed this evidence implies a "big bang theory" of human evolution.[33]

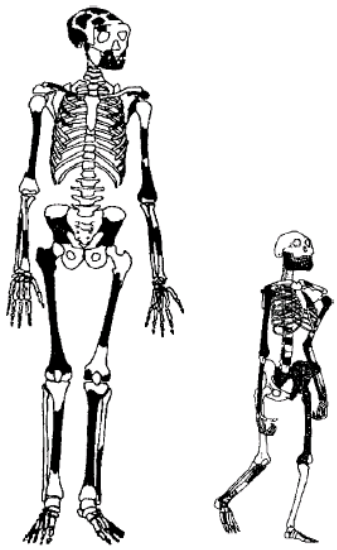

Figure 7. This diagram from Hawks et. al.[30] shows significant differences between australopithecines (right) and the earliest members of *Homo* (left).

Although Hawks et. al.[30] explain the rapid origin of *Homo* as an extreme population bottleneck during a "speciation event," the evidence matches the criteria for inferring intelligent design. Given the lack of fossil forms providing sufficient evidence of an evolutionary transformation between *Homo* and *Australopithecus*, and given the apparent very large and rapid genetic changes associated with the origin of *Homo*, from an intelligent design perspective, the "big bang" origin of Homo represents the exact kind mass-infusion of genetic information into the biosphere that would be expected had the genus *Homo* been intelligently designed apart from relation to *Australopithecus*.

Homo as a basic type

Intelligent design theory predicts that organisms which are reproductively compatible are said to be members of the same basic type.[3] Donald Johanson suggested that *Homo erectus* could reproduce with modern humans.[34] Others have suggested that given range of variation within modern humans, *Homo erectus* could be a member of our modern species.[35] Though the postcranial skeleton of *Homo erectus* is poorly understood, known remains are consistent with modern human mode of locomotion.[25] *Homo ergaster*, often classified under *Homo erectus*, was found with a nearly complete skeleton that is very similar to modern humans.[25] *Homo erectus* is the "earliest species to demonstrate the modern human semicircular [ear] canal morphology,"[21] previously noted as a feature indicative of the mode of locomotion. Some authors have even referred to *Homo erectus* and *Homo ergaster* as "early *Homo sapiens*."[30, 36]

Figure 8. Members of the basic type *Homo* have very similar skull shape. A) Replica of *Homo erectus* skull from fragments (Peking Man).[46] B) Replica of *Homo neanderthalensis* (Gibraltar Forbes Quarry).[47] C) *Homo sapiens sapiens* (modern man).[48] Skulls not necessarily on exactly the same scale.

Wood and Collard found that *Homo ergaster* and *Homo erectus* had intermediate cranial capacities,[25] but they are within human variation (see Table 1). Not only is cranial capacity of uncertain importance for determining intelligence,[31] but *erectus skulls* as large as 1250 cc[38] are within the "normal" range for humans.[11] More importantly, *erectus* remains have been found with signs of culture[39] and contemporary with modern humans.[40]

Later members of *Homo* such as *Homo neanderthalensis* are more humanlike. "Neanderthal" fossils have been called a "race" of our own species[41, 42] as their body shapes are within the range of modern human variation, [25] and they probably interbred with modern humans.[42] Even some evolutionists have speculated they had normal language capabilities.[43] and Neanderthal remains have with been found with art,[42] culture,[42, 43] including burial of their dead,[44] and technology including the usage of complex tools,[42, 43] and chain-mail armor.[45] These similarities make mating compatibility between *Homo erectus*, *Homo neanderthalensis*, with modern humans (*Homo sapiens*) a strong possibility. Neanderthal and *Homo erectus* differences from *Homo sapiens* are small and be explained as microevolutionary effects of "size variation, climatic stress, genetic drift and differential expression of [common] genes."[49]

Conclusion

In conclusion, our genus *Homo* appears to have been intelligently designed and is not connected to the australopithecine apes or any other apes through ancestry:

1) The alleged australopithecine ancestors are very different from the earliest members of *Homo*,
2) *Homo* appears suddenly and distinct, without transitions in the fossil record from any earlier forms, and
3) Subsequent forms of *Homo* are variants of and very similar to the initial forms of *Homo*.

References:

1. Simpson, G. G., *The Meaning of Evolution*, pg. 345 (Yale University Press, 1967).
2. Gee, H., *In Search of Deep Time: Beyond the Fossil Record to a New History of life* (1999).
3. Scherer, S., "Basic Types of Life" in *Mere Creation*, edited by Dembski 195-211 (1998).
4. Gould, S. J., *The Panda's Thumb*, pg. 126 (W.W. Norton & Company, 1980).
5. Gee, H., "Return to the planet of the apes," *Nature*, 412:131–132 (July 12, 2001).
6. Lewontin, R. C., Human Diversity, pg.163 (*Scientific American* Library, 1995).
7. Holden, C., "The Politics of Paleoanthropology," *Science*, p.737 (August 14, 1981).
8. There are many examples. For one prime example, see *Biology: The Dynamics of Life* (Glencoe, McGraw Hill), pgs. 438, 442, 443.
9. Hooton, E. A., *Up From The Ape*, p. 329 (McMillan, 1931).
10. Leaky, M. G., Feibel, C. S., McDouball, I., Walker, A., "New four-million-year-old hominid species from Kanapoi and Allia Bay, Kenya," *Nature*, 376:565-571 (1995).
11. Campbell, N. A., Reece, J. B., Mitchell, L. G., Biology 5th Edition, pgs. 656-665 (1999).
12. Oxnard, C. E., "The place of the Australopithecines in human evolution: grounds for doubt?," *Nature*, 258:389-395 (Dec 4, 1975).
13. Walker, A., "The Origin of the Genus Homo," in *The Origin and Evolution of Humans and Humanness*, edited by D. Tab Rasmussen, pgs. 29-47 (1993).
14. Falk, D., "Hominid Brain Evolution: Looks Can Be Deceiving," *Science*, 280:1714 ('98).
15. Conroy, G. C., et. al., "Endocranial Capacity in an Early Hominid Cranium from Sterkfontein, South Africa," *Science*, 280:1730-1731 (1998).
16. See Lovejoy, C. O., Kingsbury G. H., Burstein A. H., "The Gait of Australopithecus," *American Journal of Physical Anthropology*, 38:757-779 (1973).
17. Oxnard, C., E., "Human Fossils: New Views of Old Bones," *The American Biology Teacher*, 41(5):264-276 (1979).
18. Marchal, F., "A New Morphometric Analysis of the Hominid Pelvic Bone," *Journal of Human Evolution*, 38:347-365 (2000).
19. Collard, M., Aiello, L. C., "From forelimbs to two legs," *Nature*, 404:339-340 (2000).
20. Leakey, R.E. F., "Further Evidence of Lower Pleistocene Hominids from East Rudolf North Kenya," *Nature*, 231:241-245 (1971).
21. Spoor, F., et. al. "Implications of early hominid labyrinthine morphology for evolution of human bipedal locomotion," *Nature*, 369:645-648 (1994).
22. Gibbons, A., "In Search of the First Hominids," *Science*, 295:1214-1219 (2002).

23. Andrews, P., "Ecological Apes and Ancestors," *Nature*, 376:555-556 (1995).
24. Stanley, S., *The New Evolutionary Timetable*, pg. 141 (1981).
25. Wood, B. and Collard, M., "The Human Genus," *Science*, 284:65-71 (1999).
26. Wood, B., "Origin and evolution of the genus Homo," *Nature*, 355:783-790 (1992).
27. Tattersall, I., "The Many Faces of Homo habilis," *Evolutionary Anthropology*, 1(1):33-37 (1992).

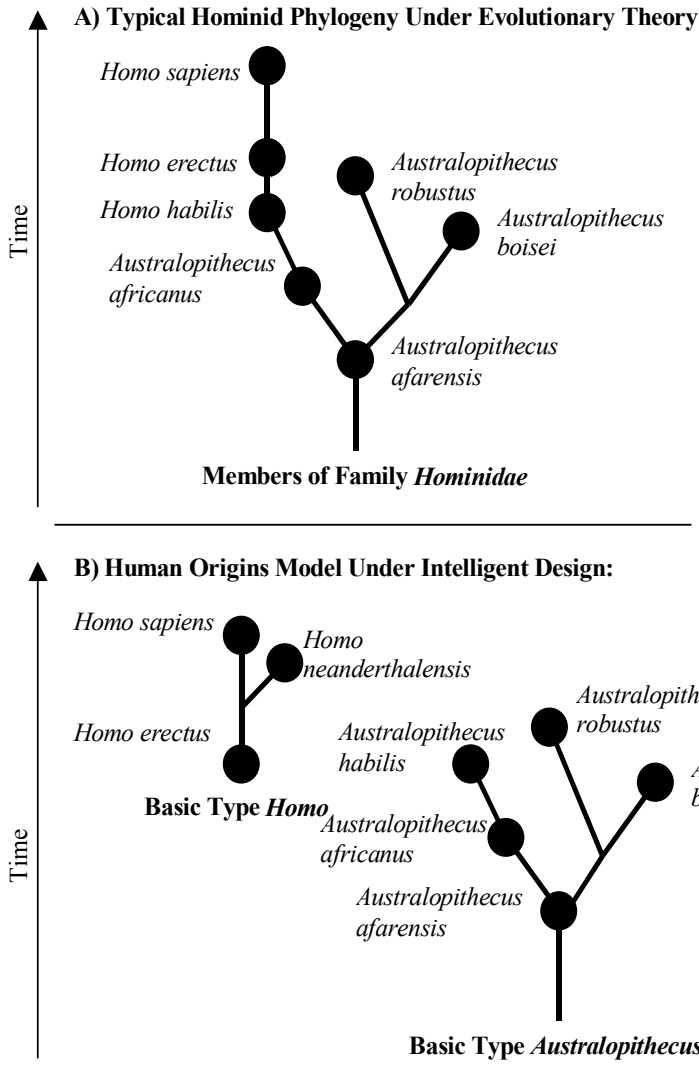

Figure 9. **A)** An approximation of a common hominid phylogeny or family tree, under an evolutionary perspective. Adapted from reference 8. Many hominid phylogenies place *Australopithecus afarensis* arising from the hominid *Ardipithicus ramidus* a little over 4 million years ago. **B)** Hominid phylogeny under intelligent design, reflecting basic types among hominids. Basic type *Homo* is unrelated to basic type *Australopithecus*. Dates have been left off to illustrate only lines of ancestry.

28. Scherer-Hartwig, S., and Martin, R. D., "Was "Lucy" more human than her "child"? Observations on early hominid postcranial skeletons," *Journal of Human Evolution* 21:439-49 (1991).
29. Hartwig-Scherer, S., "Apes or Ancestors" in *Mere Creation*, edited by William Dembski, pgs. 212-235 (1998).
30. Hawks, J., Hunley, K., Sang-Hee, L., Wolpoff, M., "Population Bottlenecks and Pleistocene Evolution," *Journal of Molecular Biology and Evolution*, 17(1):2-22 (2000).
31. Deacon, T. W., "Problems of Ontogeny and Phylogeny in Brain-Size Evolution," International Journal of Primatology, 11(3):237-282 (1990).
32. Wolpoff, M. H., *Paleoanthropology* 2nd edition, McGraw-Hill, New York (1999).
33. University of Michigan News and Information Services News Release, "New study suggests big bang theory of human evolution" (January 10, 2000), available at http://www.umich.edu/~newsinfo/ Releases/2000/ Jan00/r011000b.html" (accessed 10/21/03)
34. Johanson, D. C., and Edey, M. A., Lucy: *The Beginnings of Humankind*, pg. 144, 363 (1981).
35. in, W. S., "Eskimos and Aleuts: Their Origins and Evolution," *Science*, 142:633-645 (1963).
36. Jelinek, J., "Homo erectus or Homo sapiens?" *Rec. Adv. Primatol.* 3:419–429 (1978).
37. Molnar, S., *Races, types, and ethnic groups: the problem of human variation*, pg. 57 (1975).
38. Molnar, S., *Human Variation Races Types and Ethnic Groups*, pg. 65 (2nd ed., 1983).
39. Von Koenigswald, G. H.R., Meeting Prehistoric Man, pgs. 65-79 (1956).
40. Swisher, C. et. al. "Latest Homo erectus of Java: Potential Contemporaneity with Homo sapiens in Southeast Asia," *Science*, 274:1870-1874 (1996).
41. Delson, E., "One skull does not a species make," *Nature*, 389:445-446 (1997).
42. Wong, K., "Who were the Neandertals," *Scientific American*, Aug 25, 2003, pg. 28-37.
43. Textbook*: Essentials of Physical Anthropology*, 2004, (Thomson Wadsworth).
44. Trinkaus, E., Shipman, P., "Neandertals: images of ourselves," *Evolutionary Anthropology*, 1(6):194 - 201 (1993).
45. Notes in *Nature*, 77:587 (April 23, 1908).
46. The Evolution Store, Teaching Quality Fossil Hominids: Reconstruction of Homo erectus 'Peking Man' Replica. http://www.evolutionnyc.com/ IBS/SimpleCat/Product/asp/product-id/488185.html
47. The Evolution Store, Teaching Quality Fossil Hominids: http://www.evolutionnyc.com/IBS/SimpleCat /Product/asp/product-id/488177.html
48. University of Glasgow Hunterian Museum and Art. http://www.hmag.gla.ac.uk/ Neil/labwork/Museumlab.htm
49. Hartwig-Scherer, S., "Apes or Ancestors" in Mere Creation, edited by Dembski, pgs. 212-235 (1998).
50. Howells, W., Getting Here The Story of Human Evolution, pg. 69-85 (1993).