

Institute for Christian Teaching
Education Department of Seventh-day Adventists

**TEACHING BIOLOGY AT
AN ADVENTIST UNIVERSITY:
CHALLENGES AND OPPORTUNITIES**

by
Noble Donkor, PhD
Biology Department
Canadian University College

**610-06 Institute for Christian Teaching
12501 Old Columbia Pike
Silver Spring, MD 20904 USA**

Prepared for the
34th International Faith and Learning Seminar
held at
Valley View University – Accra, Ghana
June 18-30, 2006

Teaching Biology at an Adventist University: Challenges and Opportunities

Introduction

Almost all biology textbooks, from Anatomy to Zoology, are replete with evolutionary theory. Dobzansky (1973) put it succinctly – “Nothing in biology makes sense except in the light of evolution.” As Adventist biology educators we are expected to teach with scholarship, and also to integrate faith and learning in our lectures and laboratory sessions. In particular, Adventist biologists are expected to have a position on the question of origins.

However, in my opinion, Adventist biology teachers are faced with at least two major challenges. Firstly, from their fellow non-Adventist and non-Christian colleagues working in their fields who ask: How can you be a biologist, believe in the “doctrine of evolution,” as Haeckel (1876) put it, and also believe in the Bible? Secondly, from the students and concerned parents who are often confused about the apparently contradictory answers from different science teachers and sometimes from their own churches. These challenges are often symptomatic of deeper questions: e.g., is Adventism still reasonable and relevant today? Is it possible to be a biologist and also believe the Bible? Can Adventists believe in Darwinism and yet proclaim the gospel that call for the worship of a Creator? Is the Bible true at all? Despite these challenges, the Adventist biology teacher has the opportunity to show his students the inevitable character of assumptions in the scientific method, the limitations and relativity of science and to honestly compare the Darwinist and the creationist worldviews, and how Intelligent Design fills in between.

Sadly, most biology teachers in our institutions prefer to take the line of least resistance by keeping silent about their positions on science-faith issues. Could the perceived silence be the response to the “nervousness of Christian thought leaders about the idea of seeking a relationship between science and religion” as suggested by Brand (2000)? Or could it be that some of our biology teachers are silent naturalists who agree with the assertion that “Science teachers

are professionally obliged to stick to science, and should respectfully encourage students to discuss matters outside the domain of science with their families and clergy?” Or have some of our biology teachers become theistic evolutionists who adhere to the phrase “Scripture is to be taken seriously but not literally?” No matter the reason for our silence, one thing is certain; the naturalists (materialists) are not keeping quiet. Richard Lewontin (1997) wrote: “We take the side of science in spite of the patent absurdity of some of its constructs, in spite of its failure to fulfil many of its extravagant promises of health and life, in spite of the tolerance of the scientific community for unsubstantiated just-so stories, because we have a prior commitment, a commitment to materialism... The primary problem is not to provide the public with the knowledge of how far it is to the nearest star and what genes are made of... Rather, the problem is to get them to reject the irrational and supernatural explanations of the world, the demons that exist only in their imaginations, and to accept a social and intellectual apparatus, Science, as the only begetter of truth.”

In this paper, I use the origin of humans as a case study to discuss some of the fallacies in some of our biology textbooks. I agree with Wright (2003) that biology is a thoroughly human enterprise, and that a textbook will necessarily reflect the perspectives and biases of the authors. Also, we need to recognize that the term “science” is used to cover two very different enterprises. On the one hand, it is characterized as “empirical science” (or experimental/laboratory science), and on the other hand as “historical science.” The empirical science uses the “scientific method” involving 1) making observations and asking a question, 2) formulating the hypothesis that helps explain the observations by answering the question we asked, and 3) devising and carrying out an experiment that will test our hypothesis. Historical science is different in a fundamentally important way. Historical scientists collect data in the field, and use those data to reconstruct the past in ways that are true as possible to the evidence that is available. Like empirical scientists, those who work in historical fields look at the evidence and then “tell a story” that explains the data that has been discovered. The difference in historical science is that the worldview of the scientist can play a larger part,

since there is no way to conduct an experiment that will objectively test the story being told (Aagaard 2006). In particular, the origin of life research uses many scientific techniques, and is carried out in the laboratory, but it is equally in the category of “historical science” because when the researchers ask questions about origins, the answers they come up with can neither be checked and confirmed, nor definitely refuted. For example, despite the fact that the Darwinian story about origins is in a completely different category from the empirical science practiced in the science laboratories of the world, this expansive evolutionary story is presented in the textbooks as “facts.” Obviously, as Christian biologists, we must teach our students to understand and appreciate this distinction. I argue that every committed Adventist biologist should know his or her subject matter extremely well, be familiar with all the issues in the science-faith debates, enthusiastically instruct their students on both sides of the issues and passionately proclaim the creationist model. Anything short of this makes us practising biologists but nominal Adventists who are ashamed of the gospel.

Biology and Worldviews

The subject matter of Biology reaches more deeply into human life and thought and touches our lives in many important ways – ranging from molecular biology to principles of health and from the diversity of plants and animals to concern for the environment (Gibson 1994). However, everyone brings some basic presupposition or worldview to the task of scientific interpretation of the empirical evidence. The worldview of the authors and issues and perspectives presented in biology textbook can make an important difference in their meaning for the student. For example, there is the Christian insight that the study of biology – as it deals with the origins of life, of the vast array of living organisms, and of humankind – is to study an important part of God’s creation. On the other hand, the story told in biology texts is something quite different – that life originated spontaneously, and that the array of living things, including humans, evolved over time as the result of entirely natural processes. The Adventist biology teacher has the challenge of explaining to his students, most of whom are

sometimes perplexed by this issue, how it is possible to be a biologist and also to believe the Bible. He also has the opportunity to have a profound influence on his students to develop a worldview according to the beliefs taught in Scripture, and to continually test other worldview beliefs against the Scriptures.

There are a number of worldviews that claim the allegiance of many academics. In *Worldviews in Conflict*, Nash (1992) proposes that a well-rounded worldview includes beliefs in at least five important areas: God, ultimate reality, knowledge, ethics and humankind. Table 1 compares the Christian worldview with two worldviews that have important relevance to science and faith: naturalism and postmodernism. It is obvious that these two worldviews are in conflict with the biblical Christian worldview.

Table 1: Comparison of Christian, Naturalistic and Postmodern worldviews using Nash's (1992) scheme.

Category	Worldview		
	Christian	Naturalism	Postmodernism
God	God exists and he is almighty, eternal, personal, holy, just, and loving.	God does not exist; he is unnecessary hypothesis.	God does not exist, except as we invent him in our "stories."
Ultimate Reality	God has created the universe, and sustains it as an orderly system dependent on him for its existence, value and purpose.	The material universe is all that exists, and it is autonomous, governed by natural laws.	Reality is interpreted through our language and cultural worldviews. We cannot know what the ultimate reality is.
Knowledge	Truth exists, and we find it by using our God-given ability for rational thought and also can know truth as God reveals it in the Bible.	Only that which we can observe through our senses or through scientific method can be accepted as true.	Truth is forever inaccessible to us. "Truths" are mental constructs meaningful only in the setting of separate cultures that do not apply to each other.
Ethics	Moral laws exist; God's character and the clear biblical teachings make possible an ethical system that applies to all humans.	Objective values or ethics, if they exist, are derived from a study of human nature and the natural world.	Values are also a part of our social settings. The highest values are tolerance, inclusiveness, freedom of expression, and a rejection of claims to any universal truths.
Humankind	Humans are creatures made in the image of God, but have rebelled against him and can be reconciled to him only through Jesus Christ.	Humans are complex machines, the result of a purposeless evolutionary process.	Humans are basically what their use of language claims them to be, and the product of a social setting that keeps them from being free.

Adapted from Wright (2003).

I agree with Wright (2003) that one of the most important shaping principles is the worldview a scientist brings to his or her field of study. The best way to illustrate this idea is to use Charles Darwin as an example. Darwin's work on evolution by natural selection, which does not rest on biblical assumptions, has had an impact on biological sciences and continues to influence other areas of human thought beyond biology. But what was Darwin's worldview? The following quote from one of his letters (Wright 2003) makes it easier to see through Darwin's worldview.

"It seems to me absurd to doubt that a man may be an ardent theist and an evolutionist... What my own views may be is a question of no consequence to anyone except myself. But, as you ask, I may state that my judgment often fluctuates... In my most extreme fluctuations I have never been an atheist in the sense of denying the existence of a God. I think that generally (and more and more as I grow older) but not always, that an agnostic would be the most correct description of my state of mind"

Case study: human origin as taught in biology textbooks

As our case study, we will use one of the greatest sources of contention between science and Christian faith – the question of human origin. There are two classic – and conflicting- approaches to the origin of humankind. One is special creation: humans were uniquely designed and created by God, in a miraculous fashion. If so, the similarities between human, apes, and fossil forms are viewed as the result of common design. The other approach is that humans evolved from previously existing hominids. We should however stress that some proponents of this approach view this process as the means God used to create humans. Roth (1998) believes that the idea that both creation and evolution rest on faith is true to some extent, because both represent unique past events difficult to test and evaluate. Moreover, as Aagaard (2006) points out, naturalists should never be identified as those who do not 'believe' in this or not. Naturalists are believers just like the rest of us – they simply have different beliefs. So the question is,

where did Adam come from? Was he fashioned from the dust of the ground by an intelligent Creator, or did he descend from an ape-like creature? In this section, we will briefly refer to a few verses in the Bible that Christians believe about the origin of man. I do NOT mean to use these verses as ‘scientific’ evidence to support creation by a creator, but rather to affirm the Christian belief system. Then we will explore what the biology textbooks say about this topic, by trying to point out differences between scientific facts and what naturalists believe.

(1) “And God said, Let us make man in our image, after our likeness: and let them have dominion over the fish of the sea.... So God created man in his own image, in the image of God created he him; male and female created he them” Genesis 1: 26, 27. (2) “This is the book of the generations of Adam. In the day that God created man , in the likeness of God made he him; male and female created he them; and blessed them; and called their name Adam, in the day when they were created” Genesis 5: 1-2. (3) “And these are the generations of the heavens and of the earth when they were created, in the day that the Lord God made the earth and the heavens....and the Lord God formed man out of the dust of the ground, and breathed into his nostrils the breadth of life, and man became a living soul” Genesis 2: 4-7. (4) “I have made the earth, and created man upon it. I, even my hands, have stretched out the heavens, and their entire host have I commanded” Isaiah 45: 12. (5) “And Jesus himself began to be about thirty years of age,.....which was the son of Enos, which was the son of Seth, which was the son Adam, which was the son of God” Luke 3: 23-38. (6) “And have made of one blood all nations of men for to dwell on all the face of the earth, and have determined the times before appointed, and the bounds of their habitation” Acts 17: 26. (7) “Wherefore, as by one man sin entered into the world, and death by sin; and so death passed upon all men, for that all have sinned.Nevertheless, death reigned from Adam to Moses, even over them that had not sinned after the similitude of Adam’s transgression, who is the figure of him that was to come” Romans 5: 12-14.

Christians down through the centuries clearly regarded Adam and Eve as the parents of the human race. Instead of Adam, Charles Darwin and T. H. Huxley

offered an ape-like ancestor, and a mechanism for “creating” humankind that seemed to push God out of the picture. The story told in biology textbooks and other published literature about human origin is based on the premise that life originated spontaneously, and that the array of living things, including humans, evolved over time as the result of entirely natural processes. George Gaylord Simpson (1967), of Harvard University, has stated that “man is the result of a purposeless and natural process that did not have him in mind.”

The material presented in the biology textbooks stems from the laborious work of biologists in different fields. In the search for human origins, three major groups of scientists approach the problem from three very different perspectives: paleoanthropologists focus on fossil evidence with respect to physical features of the hominid (the name given to the bipedal primates – humans or prehistoric humanlike relatives) skeletons and on tool use; evolutionary phylogeneticists describe the similarities or relatedness of organisms; and molecular anthropologists emphasize protein and DNA similarities among the hominids.

The Fossil Finds

Many species of hominids have been found in the fossil record, and these fossils are now considered as strong evidence for human evolution. A reading of biology texts will introduce you a group of fossil hominids in the genus *Australopithecus*, and another group in the genus *Homo* (to which humans belong). The *Australopithecus* were said to be smaller than modern man, walked upright, but were more like apes from the neck up (brain capacity 400-530 cc). Some seven or eight species of *Australopithecus* have been found; all in Africa, many of which overlapped in time with each other with *Homo* species (see Fig. 1). The *Australopithecus* are divided into two groups, based on body type: (1) the gracile, small-boned, more fragile forms include *A. ramidus* (described in 1994), *A. africanus* (the ‘Taung Child’; named for the locality near which it was found), and *A. afarensis*. This species is best known from a 40 percent complete skeleton of a single young adult female skeleton, popularly known by the nickname Lucy. (2)

the robust ape-like forms include the earliest known member of the genus *Australopithecus* *A. anamensis* (described in 1995), *A. aethiopicus*, *A. robustus*, *A. boisei*, *A. bahrelghazali* (also described in 1995) and *A. garhi* (described in 1999).

Members of the genus *Homo* are distinguished from the *Australopithecus* by their larger (especially in brain capacity) size, and by their use of tools. *H. habilis* (650 cc brain capacity), *H. rudolfensis* and *H. ergaster* occurred only in Africa. *H. erectus*, *H. antecessor* and *H. heidelbergensis* occurred in Asia and Europe. The species with larger brain capacity include *H. neanderthalensis* (1,450 cc) and *H. sapiens* or *Homo sapiens sapiens* (modern humans; 1,350 cc). One scheme for the possible relationships of the hominids is shown in figure 1. The scheme shows that a number of species overlapped in time; the possible evolutionary relationships between these species, indicated by dashed lines, are highly speculative. Biologists in general accept the evolutionary development of humans and only argue about details of ancestry.

There is also a very lively debate over just when and how the first anatomically modern humans appeared (summarized in Lahr 1994). (This designation refers to skulls that look essentially like ours). The out of Africa theory, supported by the majority of workers in the field, holds that a new species (an early *H. sapiens*, as yet undiscovered) evolved in Africa from 150-200 K.Y.A and gradually spread throughout the Old World, replacing existing hominids like *H. heidelbergensis* and *H. neanderthalensis*. The multiregional theory holds that an earlier form, like *H. ergaster*, emerged about 2 M.Y.A in Africa and spread across the Old World as a single species. Then all of the intermediate forms with later dates evolved into *H. sapiens* independently. The early anatomically modern humans did not immediately show signs of modern human behavior in the artifacts they left behind; exactly when humans demonstrated such modern human traits as language, abstract thought, and symbolic expression is still a matter of debate (Wright 2003). Despite their disagreements, all paleoanthropologists agree, however, that about forty thousand years ago, fully modern humans invaded

Europe, overlapped for about ten thousand years with the Neanderthals, and then emerged as the only remaining hominids.

It must be noted also that there is NOT an unbroken chain of ancestral forms leading up to anatomically modern humans. Still, some workers believe that the fossil record points to the strong possibility that *Homo sapiens* evolved from previous hominids. The reasons they give include the fact that all of the ancestral forms were upright in posture, all members of the genus *Homo* were almost certainly tool users, based on artifacts found with them, and that the dating of these forms is well established by radiometric measurements. The questions still remains, why the broken chain?

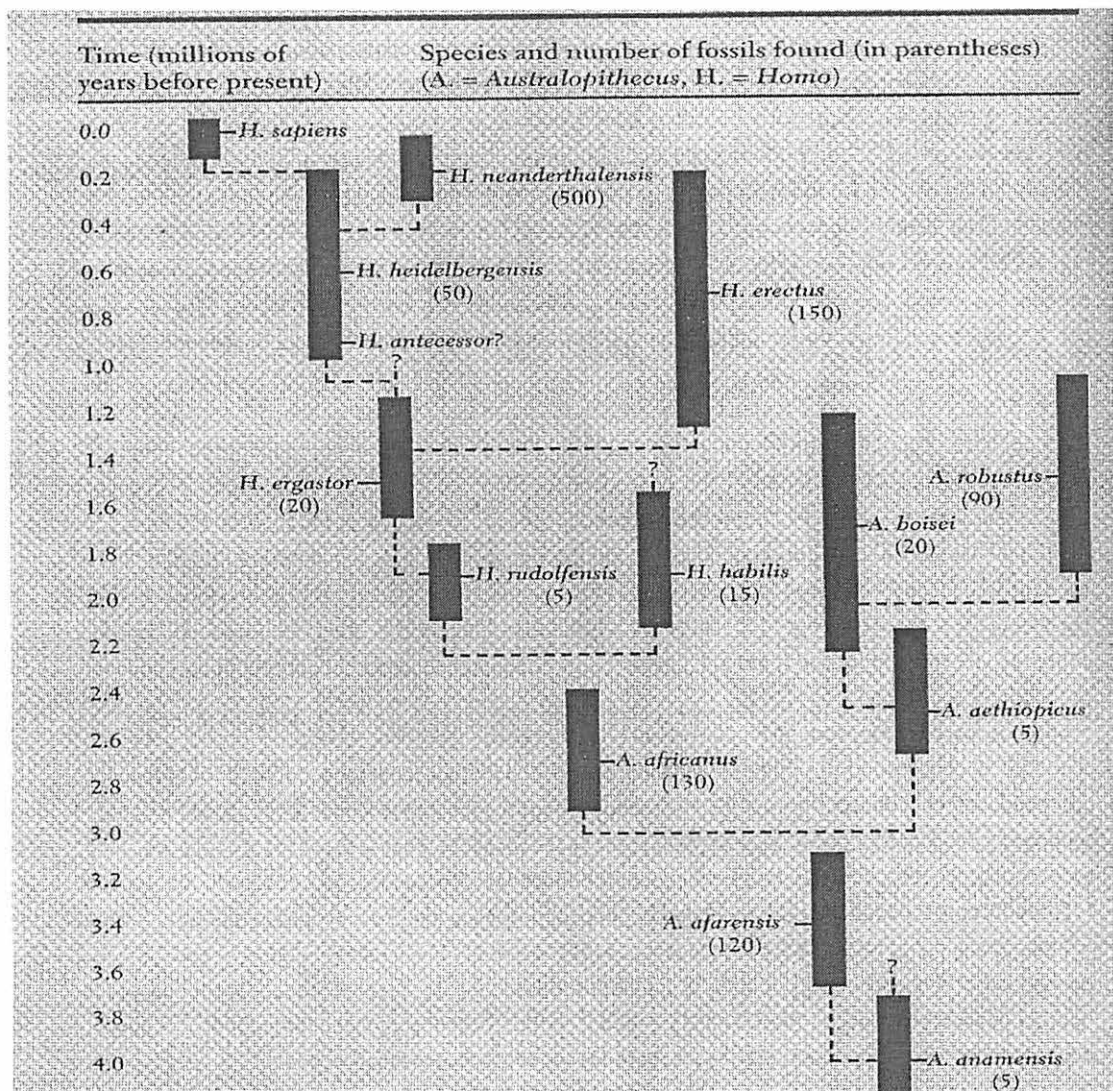


Fig. 1. Composite drawing from various sources of fossil hominids showing approximate time spans for the different species and the number of fossils found for each species. Dotted lines show speculative connections between the species. (Adapted from Wright 2003).

Hominid phylogenetic relationships

Evolutionary phylogeneticists construct diagrams (cladograms) to depict the proposed ancestral lineage of the hominids. In different textbooks, these diagrams differ because the paleoanthropologists do not agree on the specific physical features that should be used to identify ancestral relationships, timing of divergence and placement of new skeletal finds (Grine 1993). Much of the shuffling of species in these diagrams represents disputes over the validity of attributing to human evolution the various traits found in the skulls and teeth of the specimens (Kennedy 1996). For example, figure 2 shows one current scheme of how the australopithecine species were supposed to be related to each other and to our own genus *Homo*, although there are nearly as many different phylogenies as there are groups of paleoanthropologists.

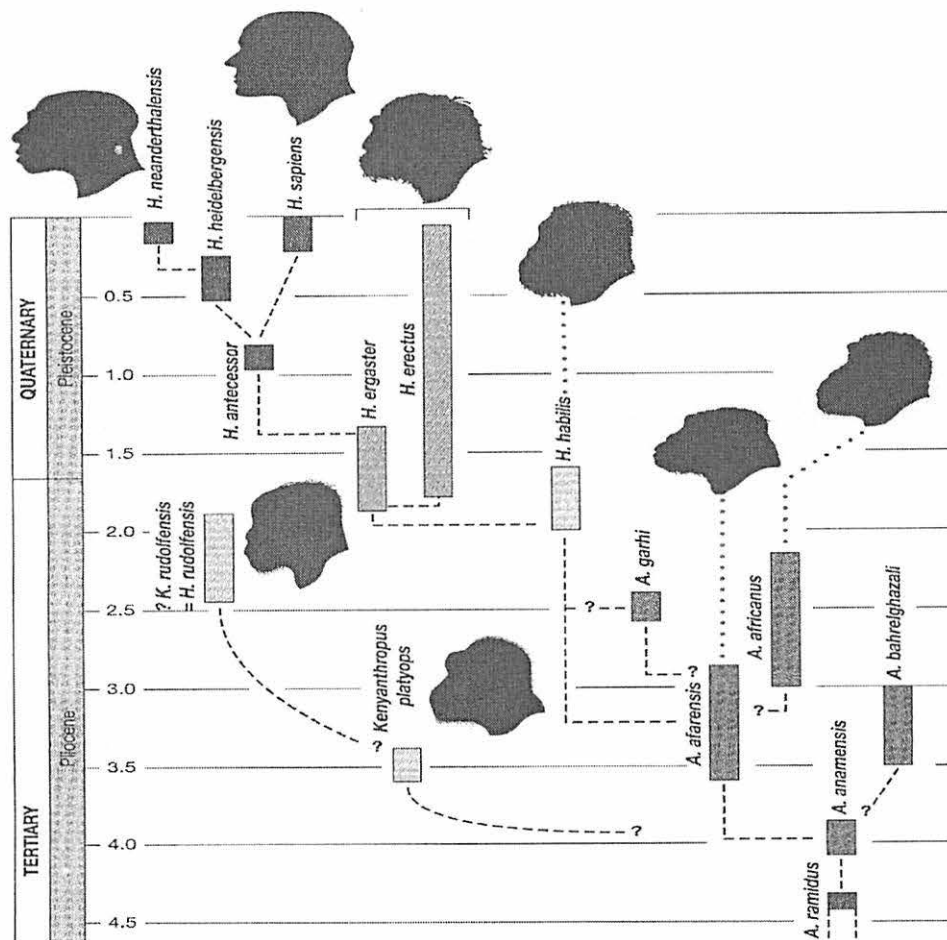


Fig.2. A hypothesis of the phylogenetic relationships within the Hominidae. (Adapted from Pough et al. 2005).

Protein and DNA similarities among the hominids

The physical similarities in morphology between humans and the apes are obvious, and have been deemed as suggestive of common ancestry. Genetic studies have revealed extremely similar chromosome structure in chimpanzees and humans; chimps have one more pair of chromosomes than man, but all of the chromosomes of the two species match well in banding and size with the exception of the extra pair, which can be coupled with another of chromosomes to match one of the human chromosome pairs (in other words, two chimpanzee chromosomes correspond to one human chromosome). Most recent studies comparing human and chimp genome sequences have suggested that the sequences that could be paired showed a 98.8 percent identity. The amino acid sequence of haemoglobins of both species is identical; gorillas differ by only one amino acid in each of the two haemoglobin subunits (141 and 146 amino acids, respectively, make up the two subunits of this protein) (Wright 2003).

The out of Africa theory is supported by some genetic studies of modern humans, especially using mitochondrial DNA and the Y chromosome. Mitochondrial DNA is inherited only from the mother because it resides in the cytoplasm of the egg, not in the nucleus, and the genome is small – only about 16,000 base pairs (Pough et al. 2005). Analysis of mitochondrial DNA allows one to trace the maternal lineage of an individual. A study of mitochondrial DNA from people all over the world (see Cann and Wilson 2003) showed that all living humans can trace their mitochondria to a woman who lived in Africa about 170,000 years ago. This hypothetical common ancestor has been called the African Eve in the textbooks. Geneticists explain that it does not mean that there was only one woman on earth 170,000 years ago; instead, it means that only one woman has had unbroken series of daughters in every generation then.

A similar approach has been used with the Y chromosome, which is passed only from father to son. The Y chromosome has about 60 million base pairs, so it is much more difficult to study than mitochondrial DNA. An analysis of 2600 base pairs from the Y chromosome indicates that all human males descended from a single individual, who is estimated to have lived 59,000 years

ago (Hammer 1995). Naturally this individual has been called the African Adam. Scientists claim that the difference between the estimates – 170,000 years versus 59,000- results from the uncertainty about the rates of mutation in mitochondrial DNA and the Y chromosome. Interesting indeed!

Critique of the Darwinian model

In spite of a number of disputes over theories of ape-human lineages Christian response to these assertions have been varied, and often sadly contradictory. Some Christians agree with the scientific community about the origin of humans but claim that at some time in the past human beings acquired an immortal soul, moral sense, and/or the ability to reason. Others, in an effort to harmonize biblical and evolutionary positions on origins, particularly with the long periods of time that all branches of evolution require, have proposed several creation theories such as the predominant Theistic evolution. Others, including bible-believing Seventh-day Adventists accept the Genesis account as the record of a historical event. This account presents human beings, male and female, created in God's image, as the culmination of creation.

If Dobzansky's (1973) assertion – "Nothing in biology makes sense except in the light of evolution" is true, then there are a lot of questions Darwinists, particularly Theistic evolutionists, should answer before biology can make sense.

1. When will Darwinists settle the debate between multiregional model of human evolution (2 MYA) and the single, African origin (150-200 KYA) for modern *Homo sapiens*? Perhaps, their response will be when data eliminate one or the other as a possibility. We wait for that time. Then, Jon Wells' saying "Nothing in Biology makes sense except in the light of evidence" will be important.
2. When will the 'uncertainty about the rates of mutation in mitochondrial DNA and the Y chromosomes' become certain for Darwinists to resolve the difference between the estimates – 170,000 years for the origin of the so-called single woman who still have offspring around today versus 59,000 years for man's origin?

3. Recent analysis of ancient DNA from the bone of a Neandertal shows considerable genetic difference from modern humans, suggesting that Neandertals were not directly ancestors to modern humans. How do Darwinists explain this? Or would they say our ancestors were someone else, and Neandertals were a dead end?
4. Modern humans do not have the distinguishing DNA markers of Neandertals, suggesting that interbreeding between these two species did not take place. Did our species gradually outcompete the others in a noncombative fashion or was there some type of direct conflict? Are Darwinists waiting for more data here too?
5. Despite similar chromosome structure in humans and chimpanzees, fossil evidence for a common ancestry of apes and hominids is lacking; none of fossil apelike primates dating from the Miocene epoch (24-5 M.Y.A.) is accepted as a progenitor of the hominids. When and how are Darwinists going to explain this? Would this be answered by more fossils?
6. What is the meaning of the 98.8 percent identity between humans and chimpanzees? Biological Anthropologist Jonathan Marks (2002) says, "if only we could figure out what it means, since we know hardly anything about how genes form bodies." Moreover, some very similar species are known to have radically different chromosomes and vice versa. In fact, humans also share about half our genes with fish and about a third with daffodils, but almost no one argues that anything can be learned from fish and flowers about human behavior.
7. There is NOT an unbroken chain of ancestral forms leading up to anatomically modern humans. When are Darwinists going to stop the speculation game that always uses the phrase that 'Homo sapiens possibly evolved from previous hominids' to supply all the missing links? In fairness to them, fossils are very rare.
8. Why haven't humans continued to evolve since fully modern humans supposedly invaded Europe about forty thousand years ago? Are Darwinists going to say it is because we control our environment more?

9. The basic data pose a question for Darwinism. If humans have existed for half a million years, why should the truly compelling evidences of past activities (writing, archeology – including evidence of civilization such as cities, ancient travel routes, etc.) appear so recently? And if humankind evolved gradually, why wait until the last one percent of that time for such advances? To the Theistic evolutionists who claim allegiance to the Bible, how do we interpret some of the unique human characteristics e.g., the good and bad men do on basis of evolutionary theory?
10. Evolutionists debate about exactly when humans demonstrated such modern human traits as language, abstract thought and symbolic expression. We read in textbooks that the Neandertals were the first humans known to bury their dead (controversy about this), but whether they had the capacity to speak is controversial too. Where do Theistic evolutionists place into context the Biblical Adam and Eve and the judgment of God to come?

Responding to seeds of discord from Theistic Evolutionists

We cannot finish this essay without addressing some of the questions posed by some Darwinists about the Christian belief. Most naturalists are either atheists or agnostics, do not have allegiance to the Bible, and often write off Christian biologists as unintelligent and irrational. Ernst Mayr (one of the most prominent figures in evolutionary biology) could claim in an article, “No educated person any longer questions the validity of the so-called theory of evolution, which we now know to be a simple fact.” Richard Dawkins (1989) also wrote: “It is absolutely safe to say that if you meet someone who claims not to believe in evolution, that person is ignorant, stupid or insane (or wicked, but I’d rather not consider that).” We do not have space to debate such comments in this paper. However, nowadays it is distressingly common to find Seventh-day Adventist biology teachers with a genuine disinclination to affirm a literal, seven-day creation as described in the bible. I believe such colleagues have fallen into the Theistic evolutionists trap and are asking questions themselves and feeding the minds of their students with these questions all in the name of scholastic teaching.

Here, we shall look at some of the landmark questions raised by theistic evolutionists.

1. They argue that Genesis chapters 1-11 are not literal, historical events (but symbolic or allegorical) e.g., the special tree, a talking serpent, a forbidden tree, God sewing clothes for Adam etc. Our response is, if we begin to cherry-pick sections of the scriptures and label them as symbolic, what will we call other events past, present and future like the 7-day creation, global flood with Noah's ark full of animals and eight persons, the Israelites' miraculous crossing through two bodies of water, all of Jesus' miracles, Jesus' bodily resurrection, and a literal personal devil, the work of the Holy spirit and the soon literal return of Jesus Christ to this earth?
2. They argue, what is the meaning of 'created in God's image?' Does this not include all the ape-like ancestors and modern man? Our response: The bible says, "Let us make man in our image, after our likeness." Genesis 1:26). The description is not applied to any other creature. Ellen White suggests that a large part of this "image of God" refers to human mind: "man was formed in the likeness of God. His nature was in harmony with the will of God. His mind was capable of comprehending divine things." White identifies this difference as "a power akin to that of the Creator – individuality, power to think and to do."
3. They argue that nothing is said in Genesis about the means or mechanisms used by God to create. Our response: what do we make of phrases like...? (Let the land produce vegetation.....let the land produce living creatures...and God formed man out of the dust and breathed into him and he became a living soul....and God caused the man to sleep and he took the rib out of him to make the woman). Do phrases like the above describe or not describe creative means and mechanisms?
4. Life after Garden of Eden....Cain and Abel ..."And Cain went out from the presence of the Lord, and dwelt in the land of Nod, on the coast of Eden. And Cain knew his wife, and she conceived and bare Enoch, and he builded a city, and called the name of the city, after the name of his son, Enoch" Genesis 4: 16-17. Evolutionist argue, where did Cain's wife come from? Were there

already people living in the near East? Does this confirm human evolution? Geologist Davis Young (1995) offers three possible approaches to this problem. Of the three explanations, he thinks (and other workers like Roy Clouser (1991) agree with this view) the best approach that presents no serious scientific problem, but rather theological challenges is that “Adam and Eve are not biological parents of the human race, but are representative parents. They claim, at around 8,000 B.C., God established a new relationship with humans. When he breathed the ‘breath of life’ into Adam, he began a covenant relationship with humans that ‘actualized’ the religious capacity that was already present in preexisting humans.” Clouser points out that there is no explicit scriptural teaching that all humans descended from Adam.

5. Since these authors think there are theological challenges to this passage, we will like to offer a theological response that throws the challenge back to their scientific assumption. “The sudden mention of Cain’s wife creates no problem. Genesis chapter 5:4 states that Adam ‘begat sons and daughters’ besides the 3 sons whose names are given. The earliest inhabitants of earth had no other choice than to marry their brothers and sisters in order to fulfill the divine command, ‘Be fruitful and multiply.’ Also, the bible explicitly teaches that all nations are from one blood (see Acts 17:26). That the custom remained in vogue is seen in Abraham’s marriage to his half sister Sarah. Such marriages, however, were later prohibited (see Leviticus 18:6-17) (see SDA Bible Commentary).

Conclusions

I would like to conclude that indeed there are challenges to the teaching of Biology in an Adventist university. At the same time we can turn these challenges into opportunities. The following point summaries should be our guide, hopefully.

1. Because of many scientific discoveries many of us are tempted to believe that there may be no limitations to what science can do. One category of limitation is domain limitation: science cannot give ultimate explanations for the origin and existing of universe. Neither can science speak to questions of value and morality,

of many areas of human experience, such as love, honor, justice, suffering and so forth.

2. Religion also makes claims that science cannot test. This does not mean that these claims are false – it's just that they are outside the realm where science works (see Brand and Jarnes 2006). For example, science cannot study supernatural processes such as creation or Jesus' miracles. Science can only do research on events or processes that can be observed, or that have occurred and left evidence behind.
3. Most textbooks have been careful to point out the limitations of science. One textbook puts it this way: "One of the most striking aspects of origin-of-life research is the great diversity of assumptions, experiments, and contradictory hypotheses...Most biologists accept that the origin of life is probably an inevitable consequence of the working of natural laws. We should emphasize, however, that this proposition is not proved and never will be.
4. Evolutionary theory has weaknesses: uncertainties are always involved in extrapolation to the past; the fossil record is incomplete; there are loose ends; some of the proponents constantly overstate their case, often confusing a scientific explanation with a worldview (Wright 2003). Coffin et al. (2005) noted that the comparative paucity of the human fossil record has left no alternative but to attempt to interpret often highly fragmentary remains, with some paleoanthropologists making premature pronouncements based on preliminary examinations of sometimes inadequate specimens, echoing prevailing theories and presuppositions and ignoring alternative interpretations.
5. The study of human origins has been and will continue to be an especially contentious area of science. This is partly because of the lack of firm data and personal involvement (or inclusion of worldview) of the scientist. I agree with Roth (1998) that the evidence of human evolution is sparse and subject to a variety of interpretations. However, the presence of higher characteristics of the human mind, such as consciousness, creativity, free will, aesthetics, morality and spirituality, all suggest that humans were specially designed as a higher kind of being and that they did not originate from animals by a purely mechanistic

evolutionary process. As Ellen White (1945) wrote long ago: “ I have been shown that without Bible history, geology can prove nothing. Relics found in the earth give evidence of a state of things differing in many respects from the present. But the time of their existence, and how long a period these things have been in the earth, are only to be understood by Bible history. It may be innocent to conjecture beyond Bible history, if our suppositions do not contradict the facts found in the sacred Scriptures. But when men leave the word of God in regard to the history of creation, and seek to account for God’s creative works upon natural principles, they are upon a boundless ocean of uncertainty. Just how God accomplished the works of creation in six literal days he has never revealed to mortals. His creative works are just as incomprehensible as his existence.”

6. Above all, on our campuses, we have to remember to avoid the temptation to alienate those who hold any other view, and refrain from labeling others as stupid, ignorant, stubborn or worse, actually heretical. In a humble manner, we should constantly engage them in useful discussions. Our greatest duty is to point out the difference between ‘fact’ and ‘stories’ and at the same time help the student know the truth that we can see through the eyes of faith.

References

- Aagaard, E. 2006. Can a believer be a scientist. Paper presented at the 34th International Faith and Learning Seminar, Valley View University, Accra, Ghana
- Brand, L. 2000. The Bible and Science. P. 139-162 In: Rasi, H. M. (ed), Symposium on the Bible and Adventist Scholarship. Christ in the Classroom, Vol. 26-B. Silver Spring, MD: Institute for Christian Teaching. Dept. of Education, General Conference of SDA's.
- Brand, L. and D. C. Jarnes 2006. Beginnings: are science and scripture partners in the search for origins? Pacific Press Publishing Association.
- Cann, R.L. and Wilson, A.C. 2003. The recent African genesis of humans. *Scientific American* 13 (2): 54-61
- Clouser, R. 1991. Genesis: On the origin of the human race. *Perspectives on Science and Christian Faith* 43, (1): 2-13
- Coffin, H.G., Brown, R. H., and L. J. Gibson. 2005. Origin by design. Review and Herald Publishing Association.
- Dawkins, R. 1989. Review of blueprints: solving the mystery of evolution. *New York Times*, April 9.
- Dobzansky, T. 1973. Nothing in biology makes sense except in the light of evolution. *The American Biology Teacher* 35: 125-129
- Gibson, L. J. 1994. A Christian approach to biology. In: Rasi, H. M. (ed), Symposium on the Bible and Adventist Scholarship. Christ in the Classroom, Vol. 11. Silver Spring, MD: Institute for Christian Teaching. Dept. of Education, General Conference of SDA's.
- Grine, F.E. 1993. Australopethicine Taxonomy and Phylogeny: Historical background and recent interpretation, *In: the human evolution source book*, R.L. Ciochon and J.G. Flegle, eds.
- Haeckel, E. 1876. (later editions in 1907, 1911). The history of creation, or the development of the earth and its inhabitants by the action of natural causes: A popular exposition of the doctrine of evolution in general and that of Darwin, Goethe and Lamarck in particular. New York: D. Appleton
- Kennedy, E. 1996. The search for Adam's ancestors. *Dialogue* 8:341-345. Princeton NJ: Princeton University Press.
- Lahr, M.M. 1994. The multiregional model of modern human origins: A reassessment of its morphological basis. *Journal of Human Evolution* 26: 23-56.
- Lewontin, R. 1997. Billions and Billions of Demons. In: *New York Review of Books*.
- Marks, J. 2002. What it means to be 98% chimpanzee. *Apes, People and their genes*. University of California Press, Berkeley.
- Nash, R.H. 1992. Worldviews in conflict: choosing Christianity in a world of ideas. Grand Rapids, MI: Zondervan Publishing House.
- Pough, F.H., Janis, C.M., and Heiser, J.B. 2004. *Vertebrate Life*. 7th ed. Pearson Education, Inc. Upper Saddle River, New Jersey.
- Roth, A. A. 1998. Origins: linking science and scripture. Review and Herald Publishing Association.

- Seventh-Day Adventist Bible Commentary, by Francis D. Nichol (Editor), Review and Herald Publishing Association, Washington, D.C., Vol 1, pg. 242.
- Simpson, G.G. 1967. The Meaning of Evolution, revised edition. New Haven: Yale University Press, p. 345.
- White, E.G. 1945. Spiritual Gifts. Vol. 3, Review and Herald Pub. Assn, Washington D.C., p.93
- Wright, R. T. 2003. Biology through the eyes of faith. Harper San Francisco.
- Young, D.A. 1995. The antiquity and the unity of the human race revisited. Christian Scholars Review 24: 380-396.