Human Fossils

Australopithecines

A recent issue of *Time* magazine (14 March 1994) displayed a picture of *Homo erectus* on the cover with the title, “How Man Began: Fossil bones from the dawn of humanity are rewriting the story of evolution.” The question of human origins fascinates us! Many people are intrigued by the possibility of descending from an ape-like ancestor only 7 million years ago. The field of paleoanthropology, the study of human fossils, embraces colorful personalities that compete for our allegiance to their particular evolutionary scheme. Mary and Louis Leakey, their son, Richard Leakey, and Donald Johanson are all recognizable names in this fascinating field of study.

Reading *Time*, *Newsweek*, and *National Geographic* convinces most people that humans evolved from ape- like ancestors. However, a now well-known poll indicates that 47% of adults in the United States, almost half, believe humans were created only 10,000 years ago and that only 9%, less than 1 in 10, believe humans are the result of an evolutionary process in which God played no part. So who’s fooling whom? I want to take a brief look at the evidence for human evolution. This is an engrossing topic with some surprising answers.

The story begins about 3.5 million years ago with the appearance of a group of animals collectively known as australopithecines. *Australo* means “southern” and *pithecines* meaning “apes.” These “southern apes,” initially discovered in South Africa, were small, apparently upright walking apes. Then around 2 million years ago, a new creature appears that is now put into the genus *Homo*, *Homo habilis*. *Homo habilis* possesses the same stature of the australopithecines but with a slightly larger brain. It is also suggested that he used a few primitive tools. Next appears the real star of human

evolution, *Homo erectus*. *Homo erectus* possesses the skeletal frame of modern humans though he's a little more robust, and his brain capacity is closer still to humans. *Homo erectus* uses more advanced tools. This "almost" human hangs around we're told for over 1.5 million years when nearly modern humans (*Homo sapiens*) begin to appear. Soon the offshoot Neanderthals arise and about the same time thoroughly modern humans appear in the last 100,000 years.

While this is the standard story, and the one you will find in the recent issue of *Time* magazine, it is far from convincing when all the data are considered. Take the australopithecines, for example. While there is still some debate about whether these creatures walked upright at all, most anthropologists accept that they walked on two legs. But it is misleading if you don't know the rest of the story. The fact is, that Lucy, the most well known australopithecine (*Australopithecus afarensis*), was also mildly adapted to life in the trees. The evolutionist William Howells said "there is general agreement that Lucy's gait is **not** properly understood, and that it was **not** something simply transitional to ours" (*Getting Here: The Story of Human Evolution*, 1993, emphasis mine). If Lucy walked upright, it was distinct from apes and humans. Not exactly what you would expect from a transitional form. Lucy is simply an extinct ape with no clear connection to humans.

The Uncertainties of *Homo Erectus*

We have all seen the series of extinct creatures that lead from ape to man. Evolutionists confidently declare that while there may be a lot of details missing from the story, the basic outline is fairly complete. This all seems rather impressive. In his recent book, *Bones of Contention* (Baker, 1992, p. 21), creationist Marvin Lubenow, offers an important observation:

> *What is not generally known is that this sequence, impressive as it seems, is a very artificial and arbitrary arrangement*

> *because 1) some fossils are selectively excluded if they do not fit well into the evolutionary scheme; 2) some human fossils are arbitrarily downgraded to make them appear to be evolutionary ancestors when they are in fact true humans; and 3) some non-human fossils are upgraded to make them appear to be human ancestors.*

The australopithecines are a good example of Lubenow's third point. These extinct apes are trumpeted as human ancestors because of their crude bipedal walking ability. But nearly everything else about them is ape-like. The origin of their bipedality would be no small evolutionary task. Even Richard Leakey admits as much in his book with Roger Lewin, *Origins Reconsidered* (pp. 83-84), when he says that the change from walking on four legs to walking on two legs

> *…would have required an extensive remodeling of the ape's bone and muscle architecture and of the overall proportion in the lower half of the body. Mechanisms of gait are different, mechanics of balance are different, functions of major muscles are different—an entire functional complex had to be transformed for efficient bipedalism to be possible.*

Yet these immense changes are not documented from the fossil record.

A good example of Lubenow's second point, the arbitrary downgrading of human fossils to make them appear to be our ancestors, is *Homo erectus*. *Homo erectus* is said to span the time from around 1.7 million years ago to nearly 400,000 years ago. From its first appearance, erectus is admitted to have a fully human post-cranial skeleton (that means everything but the head). But the brain size is given an evolutionary twist by saying that it only approaches the average for modern humans. In reality, *Homo erectus* brain size is within the range of modern humans.

Throughout the course of their book, *Origins Reconsidered*, Leakey and Lewin document an impressive array of characteristics that distinguish the ape-like qualities of australopithecines from the human qualities of *Homo erectus*. Australopithecines are small in stature, only 3-4 feet tall, and the males are twice the size of females. In humans and *Homo erectus*, the males are only 15-20% larger than females, and a juvenile *erectus* fossil is estimated to have grown to a height of six feet if he had lived.

In *Homo erectus*, all of the following characteristics display the human pattern, while in australopithecines, the ape pattern is evident: growth pattern, dental structure and development, facial structure and development, brain morphology, height to weight ratio, probable position of larynx based on the contours of the base of the skull making speech possible, and the size of the birth canal relative to the size of the adult brain.

Where some *Homo erectus* fossils differ from humans can be explained by the effects of inbreeding, dietary restrictions, and a harsh environment. But evolutionists need an intermediate, and *Homo erectus*is the only option available.

Neanderthals and the Paleontologists

In the field of paleoanthropology, the study of human fossils, one must approach the data and interpretations of the scientists involved with a careful and skeptical eye. There are a number of obvious reasons for this healthy skepticism. The most important reason being that they are looking for man’s evolutionary ancestors. If that is what you are looking for, then that is likely what you will report to have found. That is just human nature.

A second reason, is that there is a great deal of competitiveness among anthropologists. They are involved in a race to be the one to discover **the** missing link which will

mean immense notoriety and financial gain. The temptation to exaggerate the importance of their findings at the expense of others is very great.

Another reason for skepticism is that all anthropologists compare only plaster casts of the fossils or measurements available in the literature and not the fossils themselves. The actual fossils are understandably considered too delicate, fragile, and valuable to be handled directly all the time. However, plaster casts are sadly unable to accurately reproduce many of the details needed for proper study. In 1984, the largest collection of actual fossils was gathered from around the world at the American Museum of Natural History for the opening of the "Ancestors" exhibit. It was a unique opportunity for side by side comparisons that took much persuasion to pull off. The mounts for each skull or fragment were individually prepared using a cast of the original fossil. Unfortunately, when the real fossils showed up, most of them did not fit! It is a myth to think that those who teach and write on human origins have actually held in their hands even a fraction of the original material.

Evolutionists have been embarrassed on more than one occasion when their evolutionary bias, competitiveness, and lack of familiarity with the original fossils were not considered. A good example is the misinterpretation of neanderthals. Though there is still much dispute whether neanderthals are a sub-species of humans or a completely different species, in the early part of this century, there was unanimity in the belief that neanderthals were brutish, stooped creatures who were more closely related to apes than to humans. This impression stood for over forty years. One of the first complete neanderthal skeletons was found in a cave in France in 1908. It was given to the French paleontologist, Marcellin Boule to reconstruct.

From other fragmentary fossils, Boule had already formed an evolutionary bias that neanderthals were not related to

humans. Boule saw only the “primitive” traits of neanderthals and ignored clear evidence of arthritis and rickets in the skeleton. Boule reconstructed the skeleton without the curves in the spine that allow humans to walk upright. He also placed the skull far forward so that it would have been difficult to even look up as we do. Other miscues produced an individual who was little more than a shuffling hunchback. Because of his reputation, this reconstruction stood until 1957, when two scientists re-examined the reconstruction and found Boule’s prejudicial mistakes. Their study concluded that neanderthals, when healthy, stood erect, and walked normally. Neanderthals were simply stronger, stockier members of the human family.

Allowing the Facts to Speak

It is interesting to observe certain pieces of the fossil evidence for human evolution either ignored or stretched in order to not upset the accepted picture of human evolution. Creationist Marvin Lubenow, in his recent book, *Bones of Contention*, gives numerous examples of this kind of manipulation, and I’d like to discuss three of the most glaring incidents.

First is a bone fragment of the lower end of the upper arm, near the elbow, that was found near Kanapoi, Kenya, in 1965 and is given the designation, KP 271. What is unusual about this discovery is the date of around 4.5 million years—unusual because it appears for all intents and purposes to be human. Humans are not supposed to have been around 4.5 million years ago. Consequently, this small piece of humerus is usually designated as Australopithecus because that is the only hominid species known to be available at that time. Lubenow quotes Harvard anthropologist William Howells in a stunning admission,

> *The humeral fragment from Kanapoi, with a date of about 4.4 million, could not be distinguished from Homo sapiens morphologically or by multivariate analysis by Patterson and*

> *myself in 1967. . . . We suggested that it might represent Australopithecus because at that time allocation to Homo seemed preposterous, although it would be the correct one without the time element. (pp. 56-57).*

The only reason KP 271 is not listed as human is because it can't be, according to evolution.

Second, many have heard of a series of footprints found by Mary Leakey near Laetoli, Tanzania. Richard Leakey and Roger Lewin, however, just gloss over them by calling them hominid footprints (*Origins Reconsidered*, p. 103). But Lubenow documents that these footprints are identical to those made today by humans that always walk barefoot. Yet these footprints are routinely classified as Australopithecine. William Howells refers to the conclusions of Russell Tuttle from the University of Chicago and a leading expert on hominoid gates and limbs as saying that the footprints are nearly identical to modern humans and that australopithecine feet are significantly different. Tuttle suggests an undiscovered species made these prints. But he can't say that a human made them because humans aren't supposed to exist yet. In the words of evolutionist William Howells, "Here is something of an enigma" (*Getting Here: The Story of Human Evolution*, p. 79). Indeed!

Finally, Lubenow documents the incredible saga of determining the date for Skull 1470. Skull 1470 was very modern in its appearance but was found in rock previously dated at 2.9 million years—much too old for a modern skull. So some scientists set out to determine a much younger date. Lubenow recounts the back and forth wrangling over the issue. Several radioactive methods and paleomagnetism mainly pointed to 2.9 million years, but a few were found contradictory. Ultimately the radioactive dates were tossed aside in favor of a date of 1.9 million years, a date that fit the human evolution better, based on the certainty of the dates of pig evolution. Yes, pig

evolution. To quote Lubenow, “The pigs won. . . . The pigs took it all. But in reality, it wasn’t the pigs that won. It was evolution that won. In the dating game, evolution always wins” (p. 266).

A Creationist Perspective on Ancient Humans

Thus far we have been discussing some of the significant problems with evolutionary explanations of ancient human remains. But questions still remain. Many of these individuals do look very different from modern humans. Who are they? Where did they come from? Does any of this make sense from a creationist perspective? While we need to be careful not to over interpret the data as we have accused evolutionists of doing, there are a few suggestions that make some sense.

The most obvious first step is to recognize that *Homo erectus*, archaic *Homo sapiens*, neanderthals, and *Homo sapiens* form a continuum of the human family. The different forms represent genetic variation within a species and not distinct species. Many evolutionists themselves have difficulty drawing the line between these four different labels.

A group of human fossils from Kow Swamp, Australia, are no more than 13,000 years old yet contain may of the skull characteristics of *Homo erectus*. Some of the explanations for this involve cultural modifications and not genetic differences. In other words, many of the characteristics of *Homo erectus* can be achieved in modern humans by lifestyle changes. These could include deliberate forehead compression, deformation due to inbreeding, modifications due to dietary deficiencies and peculiarities. The late Arthur Custance documents differences in the modern skulls of Eskimos due to the massive jaw muscles that are developed because of their diet (*Genesis and Early Man*, 1975). Many of these changes would be labeled as primitive if dug up in some ancient river

bed, yet they exist in fully modern humans today.

Marvin Lubenow offers the interesting suggestion that many of these ancient humans are the remains of individuals within the first millennia after the flood of Noah (*Bones of Contention*, pp. 144-156). Effects of the ice age, constant cloud cover (preventing Vitamin D formation leading to rickets), largely vegetarian and uncooked diet, and expression of local genetic variation could readily account for the many different, yet anatomically related human forms. Are these ancient humans former ape-like creatures that are evolving towards humans, or are they humans caught in a unique and harsh world that brought about numerous interspecies variants? Evolutionists never bother to ask the latter question. A creationist perspective, in this case, may lead to questions that evolutionists may never ask. That is the value, in science, of a different perspective.

Human Cloning

Note: Please read The Little Lamb That Made a Monkey of Us All for the author's comments on the news of a successful lamb cloning (March 7, 1997). Also, please read the author's subsequent article Can Humans Be Cloned like Sheep? for an updated, expanded discussion.

Human cloning: Is *Brave New World* just around the corner? Well, no, not even close. Reports of human cloning in early October 1993, by researchers Robert Stillman and Jerry Hall from George Washington University sparked a firestorm of controversy. While a real-life version of Aldous Huxley's science-fiction prediction is nowhere near being fulfilled,

there are serious questions about the ethical legitimacy and potential abuses that could result from the recently announced research.

In one respect, I sympathize with the scientists involved who naively felt their work was nothing unusual and who suddenly found themselves the subjects of *New York Times* and *Time* magazine cover stories as well as the special guests on "Good Morning America," "Nightline," and "Larry King Live." The spotlight did not suit them very well. Some aspects of the media hoopla were drastically overplayed, but other concerns are very real. What did the research actually accomplish?

Stillman and Hall, rather than cloning humans, actually just performed the first artificial twinning using human embryos. A similar procedure has been performed in mice successfully for twenty years and in cattle for ten years. Identical twins are produced when a fertilized egg divides for the first time and instead of remaining as one organism, actually splits into two independent cells. Stillman and Hall were able to achieve this same effect by removing the protective layer around the developing embryo (zona pellucida), splitting the cells apart, and replacing the outer coating with an artificial shell.

Essentially, this raises the possibility of creating as many as eight identical embryos where there was once only a single embryo consisting of eight cells. The procedure was pursued in order to assist couples seeking in vitro fertilization. Many women are unable to produce multiple eggs. Once fertilized, the resulting embryos only implant 10-20% of the time. Therefore, if you have 2 to 8 identical embryos, all formed from one original embryo, you can implant one and freeze the rest. If the first implant is unsuccessful, you can thaw one of the frozen twins and try again.

To call this cloning, as the media have done, is a bit misleading. The more usual meaning of cloning an individual would be to take a cell from an adult individual, remove the

nucleus, implant it in a fertilized egg that has had its nucleus removed. Strictly speaking, this is not possible today. The feat was accomplished in frogs back in 1952 by taking the nuclei of cells from the intestinal lining of tadpoles and implanting them into fertilized eggs that had the nuclei destroyed by irradiation. However, only about one in a thousand implants are successful. Many of the frogs die early but others grow into rather grotesque monsters. No, true cloning is a long way away indeed.

So if true cloning has not actually been achieved, then is there any real cause for concern? Indeed, there is!

The Ethical Dilemmas of Artificial Twinning

The initial outcry concerning the work of researchers Stillman and Hall at George Washington University has come from the public and the media. But many of their own colleagues are upset.

Many within the field have recognized for quite some time that artificial twinning would be possible with human embryos. But they knew that such experiments would raise a host of ethical concerns that they were unwilling to deal with. It is unfortunate that Stillman and Hall were so unprepared for the controversy because it just reinforces the idea many of us have that all scientists are blind to the ethical ramifications of their work. It is clear from interviews that Stillman and Hall care deeply, but just didn't think ahead.

Jerry Hall was asked in the *Time* magazine article (8 November 1993, p. 67) if he feared that his work would create a public backlash towards this kind of research. He said: "I respect people's concerns and feelings. But we have not created human life or destroyed human life in this experiment." What this statement implies is that Hall and Stillman do not consider the embryos they were working with as human life. The embryos

used in this research project were doomed from the start because they were fertilized with more than one sperm. The extra genetic material precludes the possibility of normal embryonic development. But does this mean that these embryos are not human?

Many individuals carry a death sentence because of congenital conditions or genetic disease, but they are certainly human. We will all die eventually. The timetable is not important. I believe that these embryos were human beings and further experimentation was performed on them which added an additional risk to their already imperiled condition. If I had been a member of the ethical review board of George Washington University, I would have denied permission to pursue these experiments. Human experimentation was performed without informed consent.

Hall and Stillman have defended their work by saying they consider it only a logical extension of in vitro fertilization. These efforts are driven by a desire to relieve human suffering—in this case the suffering of infertile couples. I know of many couples who have battled infertility, and I know that their pain is real and deeply rooted. But I also believe that this is a case where our desire to live in a painless world is clouding our ability to make moral decisions. One woman who had undergone eight unsuccessful in vitro attempts was asked if she would be willing to try artificial twinning. She said: “It’s pretty scary, but I would probably consider it as a desperate last attempt.” She is clearly frightened by the moral and ethical implications, yet if nothing else worked, she’d do it! Our decisions are based more on the tug of our hearts and pocketbooks than with our minds. We are losing our moral will! The whole subject is rife with potential abuses by people on all sides of the issue.

What Are the Potential Abuses of Artificial Twinning?

While artificial twinning itself raises some serious ethical questions, other possible scenarios that this research can lead to are just as troubling.

The two researchers involved have remarked that they felt their research was just the next logical step after in vitro fertilization. One of the warnings of Kerby Anderson, a familiar voice on the Probe radio program, in his book *Genetic Engineering* over ten years ago, was the argument of the slippery slope. Once a new technology is perfected, it opens up other technologies which are more troublesome than the original. Once started down the slope, it is hard to reverse directions. Hall and Stillman, by their own admission, have taken the next step down the slippery slope after in vitro fertilization. It is now important to assess the next step.

There are several scenarios which have received attention. One concerns couples who are known to be at risk for a hereditary disease such as cystic fibrosis. If from a single fertilized egg, two to four identical embryos could be created by the artificial twinning process, then one could be tested for the genetic marker, and the others held in frozen storage. The genetic testing may require the destruction of the initial embryo. If the test is negative, then one of the reserve embryos could be thawed, implant- ed, and brought to term. This process is hardly respectful of human life. If the test confirms the presence of the genetic disease, all embryos could be destroyed.

Another suggestion is that the artificial twins could be kept frozen as an insurance policy even after the original child is born. If the original child dies at an early age, a frozen twin could be thawed, and the parent would have the identical child to raise again. Another suggestion has been to keep the

frozen twins available in case the original twin needs a bone marrow transplant or some other organ. The tissues would match perfectly. A couple in California has already set a precedent by electing to have another child to provide bone marrow for their older daughter that had contracted leukemia. Fortunately for them, the tissues matched and both children are doing fine.

A final scenario suggests that frozen twins can be kept in reserve as the saleable stock for children catalogs. A catalog could be set up offering pictures and descriptions of the original twin and offering prospective parents the opportunity to have the very same child. This may sound foolish to you, but there are many in our society who would be willing to pay for just such a service. If you truly respect human life, then none of these possibilities should make sense. In light of what we have discussed, the subject of placing limits on scientific research also needs to be addressed.

What Can Constrain Scientific Research?

One of the questions that inevitably comes up is whether such research should be allowed to be done at all. Some of the scenarios I mentioned earlier are chilling. We wonder if such things can be stopped by restricting the kinds of research that is done.

I have to admit that as a scientist myself, I am wary of giving the public a free voice to approve or disapprove what kinds of research are pursued by qualified scientists. Scientists themselves are usually the best judges of whether a particular project is worth doing on its scientific merits. Only other scientists can judge the worthiness of a research proposal based solely on its ability to contribute significantly to our body of scientific knowledge. In a society deeply rooted in the Judeo-Christian heritage, scientists could generally be trusted to make the correct moral decisions about their research as well. But this is not

the case in our society today. We are a culture which is without a moral rudder. There is indeed a culture war going on. One of the consequences of this lack of direction is that many scientists and ethicists believe that scientists should be free to pursue their research goals regardless of what the long-term consequences might be.

John Robertson is a professor of law at the University of Texas. In a recent editorial, he said:

> *As long as the research is for a valid scientific purpose, embryos that would otherwise be discarded can, with the informed consent of the couple whose eggs and sperm produced the embryos, be ethically used in research. Neither the lack of guidelines, the moral objections of some people to any embryo research, nor the fears about where cloning research might lead justify denying researchers the ability to take the next step. (Chronicle of Higher Education, 24 November 1993, p. A40)*

Essentially Professor Robertson has insulated himself from any criticism from outside the scientific community. As long as informed consent can be obtained from the parents, the sole criteria is a valid scientific purpose. Questions concerning the sanctity of human life are not allowed. Questions concerning the potential abuses are not allowed. In other words, scientists exist in some kind of a moral vacuum.

I am afraid that this kind of research is going to continue simply because there is not a large enough moral consensus present in society to prevent it. We have become too powerfully driven by the personal end in mind to repudiate the means to get there. Do we raise our voices in protest? Certainly. Do we continue to point out the moral and logical fallacies in the prevailing arguments? Certainly. But until the culture at large turns its attention from the immediate gain and considers what is right, the ethical slide will

continue.

Moreover, there is the even more questionable and fear-provoking question of whether true human cloning is feasible.

Is Human Cloning Really Possible?

True cloning, as opposed to artificial twinning, is much more involved. Cloning is a technique that is partly successful in frogs. Frogs can be cloned by collecting eggs from a female frog. The nucleus in the eggs is destroyed by irradiation. Next, cells are isolated from the intestinal lining of a tadpole. The nucleus is removed from the intestinal cell and placed within a previously enucleated egg. The egg now has the opportunity to begin cell division and development.

Most of these embryos do not survive. Of those that do survive, the majority grow into rather grotesque monsters. Only about one in a thousand develop into a normal looking adult frog. One small catch is that all of these normal looking frogs turn out to be sterile. Even so, this is a remarkable achievement. But is this possible in humans, and if so, what are the barriers.

The first item to note is that the frog experiments utilized nuclei from a developing tadpole. Embryonic tissue is still actively dividing. Using a nucleus from a dividing cell is crucial to the success of these experiments. Non-dividing cells such as adult bone and neural cells have had the cell division portions of their genes turned off by a variety of molecular mechanisms. That is why the use of most adult cells would be impossible in these experiments. They wouldn’t work. It also explains why DNA from long dead cells such as from a mummy, or even a dinosaur as in Jurassic Park is totally impractical.

Some cells in the adult body are actively dividing, such as skin fibroblasts. These cells continually supply new skin

cells to replace those which sluff off. In fact it was skin fibroblasts that were purportedly used for cloning a man in David Rorvik's fictional book, *In His Image: The Cloning of a Man*, back in the late seventies. But there are difficulties here too. Skin cells have had many genes switched off. These are skin cells, not liver cells, or eye cells, or bone cells. All of the genes needed to produce the unique proteins required by all these specialized cells have been switched off by a variety of molecular mechanisms. Many of these mechanisms are unknown; consequently, we do not know how to unlock them. Nor do we know how to get them expressed in the correct sequence necessary for embryological development.

There are so many roadblocks to the successful cloning of an adult human that I don't expect it any time soon. However, I am afraid our current culture will pursue this possibility as long as there is potential profit and a perceived scientific benefit.

Safe Sex and the Facts – A Christian Perspective

Dr. Ray Bohlin provides a look at the many problems surrounding the idea of safe sex from a Christian, biblical worldview perspective as well as a scientific perspective. He provides a sound argument for supporting the Christian view of sex being reserved for the marriage relationship.

 *This article is also available in Spanish.*

At age 16 John had sex with Andrea. Just one time. He enjoyed

the experience but felt guilty and decided the risk of sexually transmitted diseases (STDs) and pregnancy were just too great. He did not have sex again until nine years later when he married Cindy, who was a virgin. Three months after their wedding Cindy began having painful symptoms. Unknowingly John, who had never had any symptoms of disease, had brought two STDs into his marriage. But John and Cindy were lucky; they both responded to treatment and are healthy today. Many others, however, are not so fortunate. Today STDs are at unprecedented and epidemic proportions. Thirty years of the sexual revolution is paying an ugly dividend, and those most at risk are teenagers. This is true partially because teenagers are more sexually active than ever before, but also because teenage girls are more susceptible to STDs than males or adult females.

While a few STDs can be transmitted apart from sex acts, all are transmissible by the exchange of bodily fluids during intimate sexual contact. I want to discuss the severity of the problem as well as what must be done if we are to save a majority of the next generation from the shame, infertility, and sometimes death, that may result from STDs.

If you are not aware of some of the following statistics, then prepare to fasten your seat belt because what I have to report is not pretty. The information I am about to share is from data gathered by the Medical Institute for Sexual Health in Austin, Texas.(1) All of these statistics are readily available from reputable medical and scientific journals.

Today, there are approximately 25 STDs. A few can be fatal. Some are relatively harmless, but all are humiliating. Many women are living in fear of what their future may hold as a result of STD infection. It is estimated that 1 in 5 Americans between the ages of 15 and 55 are currently infected with one or more viral STDs, and 12 million Americans are newly infected each year. That’s nearly 5% of the entire population of the U.S.! Of these new infections, 63% involve people less

than 25 years old.

This epidemic is a recent phenomenon. Some young people have parents who may have had multiple sexual part-ners with relative impunity and conclude that they too are safe from disease. However, most of these diseases were not around 20 to 30 years ago. Prior to 1960, there were only two prevalent sexually transmitted diseases: syphilis and gonorrhea. Both were easily treatable with antibiotics.

In the sixties and seventies this relatively stable situation began to change. For example, in 1976, chlamydia first appeared in increasing numbers in the U.S. Chlamydia, particularly dangerous to women, is now the most common bacterial STD in the country. In 1981, human immuno-deficiency virus (HIV), the virus which causes AIDS, was identified. By early 1993, between 1 and 2 million Americans were infected with HIV or AIDS, over 12 million were infected worldwide, and over 160,000 had died in the U.S. alone. Then herpes was added to the mix. This STD now infects 30 million people.

In 1985, human papilloma virus (HPV) began a dramatic increase. This virus can result in venereal warts and will often lead to deadly cancers.

By 1990, penicillin-resistant strains of gonorrhea were present in all fifty states, and by 1992 syphilis was at a 40-year high. As of 1993, pelvic inflammatory disease (PID), which is almost always caused by gonorrhea or chlamydia, was affecting 1 million new women each year. This includes 16,000 to 20,000 teenagers. This infection can result in pelvic pain and infertility and is the leading cause of hospitalization for women between the ages of 15 and 55, apart from pregnancy.

Pelvic inflammatory disease can result in scarred fallopian tubes which block passage of a fertilized egg. The fertilized egg, therefore, cannot pass on to the uterus, and the growing embryo will cause the tube to rupture. From 1960 to 1990 there

was a 400% increase in tubal pregnancies, most of which were caused by STDs. Making matters even worse is the fact that 80% of those infected with an STD don’t know it and will unwittingly infect their next sexual partner.

The Medical Facts of STDs

Syphilis is a terrible infection. In its first stage, the infected individual may be lulled into thinking there is little wrong since the small sore will disappear in 2 to 8 weeks. The second and third stages are progressively worse and can eventually lead to brain, heart, and blood vessel damage if not diagnosed and treated. The saddest part is that syphilis is 100% curable with penicillin, yet there is now more syphilis than in the late 1940s, and it is spreading rapidly.

Chlamydia, a disease which only became common in the mid-1980s, infects 20 to 40% of some sexually active groups including teenagers. In men, chlamydia can cause infertile sperm, a condition reversible with antibiotics. In women, however, the infection is devastating. An acute chlamydia infection in women will result in pain, fever, and damage to female organs. A silent infection can damage a woman’s fallopian tubes without her ever knowing it. A single episode of chlamydia PID can result in a 25% chance of infertility. With a second infection, the chance of infertility rises to 50%. This is double the risk of gonorrhea.

Treatment with antibiotics is not always successful. One study reported that 18% showed a recurrence of infection within 3 weeks. As many as 14% of teenagers do not respond to treatment, and ultimately require a hysterectomy. It is an overwhelming burden for an 18- or 19-year- old girl to have to face the fact that she will never be able to bear a single child.

The human papilloma virus (HPV) is an extremely common STD.

One study reported that at the University of California, Berkeley, 46% of the sexually active coeds were infected with HPV. Another study reported that 38% of the sexually active females between the ages of 13 and 21 were infected.

HPV is the major cause of venereal warts which are extremely difficult to treat and may require expensive procedures such as laser surgery. HPV can result in pre-cancer or cancer of the genitalia. By causing cancer of the cervix, this virus is presently killing more women in this country than AIDS, or over 4,600 women in 1991. HPV can also result in painful intercourse for years after infection even though other visible signs of disease have disappeared.

And of course there is the human immunodeficiency virus, or HIV, the virus that causes AIDS. The first few cases of AIDS were only discovered in 1981; now, in the U.S. alone, there are between 1 and 2 million infected with this disease. As far as we know, all of these people will die in the next ten to fifteen years. As of early 1993, approximately 160,000 had already died.

In 1991 a non-random study at the University of Texas at Austin showed that 1 in 100 students who had blood drawn for any reason at the university health center was HIV infected.

While the progress of the disease is slow for many people, all who have it will be infected for the rest of their lives. There is no cure, and many research-ers are beginning to despair of ever coming up with a cure or even a vaccine (as was eventually done with polio). In 1992, 1 in 75 men was infected with HIV and 1 in 700 women. But the number of women with AIDS is growing. In the early years of the epidemic less than 2% of the AIDS cases were women. Now the percentage is 12%.

Teenagers Face Greater Risks from STDs

One of the statistics I have mentioned is that teenagers are particularly susceptible to STDs. This fact is alarming since more teens are sexually active today than ever before. An entire generation is at risk, and the saddest part about it is that most of them are unaware of the dangers they face. Teenagers must be given the correct information to help them realize that saving themselves sexually until marriage is the only sure way to stay healthy.

The medical reasons for teens' high susceptibility to STDs relates specifically to females. The cervix of a teen-age girl has a lining (ectropion) which produces mucus that is a great growth medium for viruses and bacteria. As a girl reaches her 20s or has a baby, this lining is replaced with a tougher, more resistant lining. Also during the first two years of menstruation, 50% of the periods occur without ovulation. This will produce a more liquid mucus which also grows bacteria and viruses very well. A 15-year-old girl has a 1-in-8 chance of developing pelvic inflammatory disease simply by having sex, whereas a 24-year-old woman has only a 1- in-80 chance in the same situation.

Teenagers do not always respond to antibiotic treatment for pelvic inflammatory disease, and occasionally such teenage girls require a hysterectomy. Infertility is an increasing problem in our society. It is estimated that one-fourth to one-third of all female infertility in marriage is a result of STDs.

Teenagers are also more susceptible to human papilloma virus, HPV. Rates of HPV infection in teenagers can be as high as 40%, whereas in the adult population, the rate is less than 15%. Teenagers are also more likely to develop precancerous growths as a result of HPV infection than adults. These precancerous growths in teenagers are also more likely to develop into invasive cancer than in adults.

Apart from the increased risk from STDs in teens, teen-age pregnancy is also at unprecedented levels. In 1985 there were over 1 million teen-age pregnancies; 400,000 of these ended in abortion. Abortion is not a healthy procedure for anyone to undergo, but this is especially true for a teenager. Not getting pregnant to begin with is far better. Oral contraceptives are not as effective with teenagers, mainly because teens are more apt to forget to take the pill. Over a one-year period, as many as 9 to 18% of teenage girls using oral contraceptives become pregnant.

Finally, when teenagers start having sex earlier in life, they are much more likely to have multiple sexual partners, a behavior that puts them at greater risk for STD. When teenagers become sexually active before they are 18 years of age, 75% of them will have more than 2 partners and 45% of them will have 4 or more partners. If sexual activity begins after the 19th birthday, only 20% will have 2 or more partners and only 1% will have 4 or more partners. (These statistics were reported by the Centers for Disease Control after interviewing people in their 20s.)

Is Safe Sex Really the Answer?

I must now take a hard look at the message of safe sex which is being taught to teens at school and through the media.

Some people believe that if teens can be taught how to use contraception and condoms effectively, rates of pregnancy and STD infection will be reduced dramatically. But common sense and statistics tell us otherwise. At Rutgers University, the rates of infection of students with STD varied little with the form of contraception used. For example, 35 to 44% of the sexually active students were infected with one or more STDs whether they used no contraceptive, oral contraceptive, the diaphragm, or condoms. It is significant to note that condoms, the hero of the safe sex message, provided virtually no protection from STDs.

Will condoms prevent HIV infection, the virus that causes AIDS? While it is better than nothing, the bottom line is that condoms cannot be trusted. A study from Florida looked at couples in which one partner was HIV positive and the other was negative. They used condoms as protection during intercourse. After 18 months, 17% of the previously uninfected partners were HIV positive. That is a one-in-six chance, the same as in Russian roulette.

Condoms do not even provide 100% protection for the purpose for which they were designed: prevention of pregnancy. One study from the School of Medicine Family Planning Clinic at the University of Pennsylvania reported that 25% of patients using condoms as birth control conceived over a one-year period. Other studies indicate that the rate of accidental pregnancy from condom-protected intercourse is around 15% with married couples and 36% for unmarried couples.

Condoms are inherently untrustworthy. The FDA allows as many as one in 250 to be defective. Condoms are often stored and shipped at unsafe temperatures which weakens the integrity of the latex rubber causing breaks and ruptures. Condoms will break 8% of the time and slip off 7% of the time. There are just so many pitfalls in condom use that you just can’t expect immature teenagers to use them properly. And even if they do, they are still at risk.

Studies are beginning to show that school-based sex education that includes condom use as the central message, does not work. A study in a major pediatric journal concluded that the available evidence indicates that there is little or no effect from school-based sex- education on sexual activity, contraception, or teenage pregnancy.(2) This study evaluated programs that emphasized condoms. In addition, programs that emphasize condoms tend to give a false sense of security to sexually active students and make those students who are not having sex feel abnormal.

The list of damages from unmarried adolescent sexual activity is long indeed. Apart from the threat to physical health and fertility, there is damage to family relationships, self-confidence and emotional health, spiritual health, and future economic opportunities due to unplanned pregnancy. Condom-based sex- education does not work.

Saving Sex for Marriage is the Common Sense Solution.

The epidemic of sexually transmitted diseases is running rampant in this country and around the world. Diseases such as chlamydia, human papilloma virus, herpes, hepatitis B, trichomonas, pelvic inflammatory disease, and AIDS have joined syphilis and gonorrhea in just the last 30 years. There is no question that the fruits of the sexual revolution have been devastating. I have also shown how our teen-agers are at a greater risk for sexually transmitted diseases than are adults and that sex-education based on condom use is ineffective and misleading. There is only one message that offers health, hope, and joy to today's teenagers. We need to teach single people to save intercourse for marriage.

Sex is a wonderful gift, but if uncontrolled, it has a great capacity for evil as well as good. Our bodies were not made to have multiple sex partners. Almost all risk of STD and out-of-wedlock pregnancy can be avoided by saving intercourse for marriage. And it can be done.

Statistics show clearly that in schools that teach a sex education program that emphasizes saving intercourse for marriage, the teen pregnancy rate drops dramatically in as little as one year. In San Marcos, California, a high school used a federally funded program ("Teen Aid") which emphasizes saving intercourse until marriage. Before using the program there were 147 pregnancies out of 600 girls. Within two years, the number of pregnancies plummeted to 20 out of 600 girls.(3)

As of 1992, San Marcos was still using this program and was still satisfied with it. In Jessup Georgia, upon instituting the “Sex Respect” program, the number of pregnancies out of 340 female students dropped from 17 to 13 to 11 to 3 in successive years.

Delaying intercourse until teens are older is not a naive proposal. Over 50% of the females and 40% of the males between 15 and 19 have not had intercourse. They are living proof that teens can control their sexual desires. Of those who had at least one sexual experience, 20% had sex in the past but were not currently sexually active. Therefore, a minority of students are sexually active.

Condom-based sex-education programs basically teach teen-agers that they cannot control their sexual desires, and that they must use condoms to protect themselves. It is not a big leap from people being unable to control their sexual desires to being unable to control their hate, greed, anger, and prejudice. This is not the right message for our teenagers!

Teenagers are willing to discipline themselves for things they want and desire and are convinced are beneficial. Girls get up early for drill team practice. Boys train in the off-season with weights to get stronger for athletic competition. Our teens can be disciplined in their sexual lives if they have the right information to make logical choices.

Saving sex for marriage is the common sense solution. In fact, it is the only solution. We don’t hesitate to tell our kids not to use drugs or marijuana, and most do not. We tell our kids it’s unhealthy to smoke, and most do not.

It is normal and healthy not to have sex until marriage. STDs are so common that it is not an exaggeration to say that most people who regularly have sex outside of marriage will contract a sexually transmitted disease. Our sexuality should blossom within the confines of a mutually faithful monogamous

relationship. We need to reeducate our kids not just in what is healthy, but in what is right.

Notes

1. Medical Institute for Sexual Health, P.O. Box 4919, Austin, TX 78765.

2. I.W. Stout, et al., *Pediatrics*, 1989, 83:376-79.

3. Joe S. McIlhaney, Jr., Safe Sex (Grand Rapids, Mich.: Baker Book House, 1991), p. 86.

The Grand Canyon and the Age of the Earth – A Christian Scientist's View

As a Christian scientist, Dr. Bohlin is open to examining the theories of both young-earth and old-earth scientists to explain what we can observe today. The Grand Canyon provides an excellent venue to consider the theories of both groups on how the geological layers were formed and when this occured.

The Age of the Earth and Genesis 1

How old is the earth? How long has this planet been here? Ask most Christians this question and you will likely receive a quick, self-assured answer. All would be well if you could count on receiving the same answer! However, some will very quickly tell you that the earth was created during creation week and can be no more than six to ten thousand years old.

Other Christians will tell you, with just as much confidence, that the earth is 4.5 billion years old. This is no minor discrepancy! What adds even more to the confusion is the fact that you can find both opinions within conservative evangelical circles. You can even find both opinions within the ranks of the few Christian geologists with Ph.D.s! Let me assure you that this is just as confusing for me as it is for you.

The age of the earth is a question both of biblical interpretation and scientific investigation. Unfortunately, neither Christian conservative Old Testament scholars nor Christian scientists are in universal agreement. This topic covers a broad spectrum of issues so I am going to try and narrow the focus of the discussion. I will first briefly discuss the biblical aspects of the question, then move on to geology, the flood, and the Grand Canyon.

First, how do the “young-earth” and “old-earth” positions view the Scriptures? Let me emphasize right at the start that both young- earth and old-earth creationists bring a reverent and submissive attitude to Genesis. The difference is a matter of interpretation. Well-known young-earth creationists Henry Morris, Duane Gish, and Steve Austin, from the Institute for Creation Research, interpret the days of Genesis 1 as literal 24-hours days, the genealogies of Genesis 5 and 11 as consecutive or nearly consecutive generations, and the flood as a universal, catastrophic event. This leaves little room for much more than ten to thirty thousand years as the true age of the earth.

Old earth creationists such as astronomer Hugh Ross of Reasons to Believe see the days of Genesis as long periods of time, perhaps even millions of years. Genesis 1, then, describes the unfolding of God’s creation through vast periods of time. God still does the work, it is still a miracle, but it takes a lot longer than seven days. The flood of Noah necessarily becomes a local event with little impact on world-wide geology. Other

old-earth creationists simply suggest that what is communicated in Genesis 1 is a literary form of the ancient Near East describing a perfect creation. Genesis 1 was never intended to communicate history, at least in their view. Personally, my sympathies lie with a Genesis interpretation that is historical, literal, and with 24-hour days in the recent past. But the testimony of science, God's natural revelation, is often difficult to correlate with this view. The earth has many layers of sediments thousands of feet thick. How could one year-long catastrophe account for all this sediment? The answers may surprise you!

The Grand Canyon

The Grand Canyon is almost three hundred miles long, a mile deep, and four to twelve miles across. One's first view of the Grand Canyon is a humbling experience. You truly have to see it to believe it. I was mesmerized and could hardly contain my excitement when I caught my first glimpse of the canyon. I was there to partake in a six-day geology hike into the canyon with the Institute for Creation Research, a young-earth creationist organization. ICR believes that the strata, the layers of rock in the Grand Canyon, were primarily formed during Noah's flood perhaps only five thousand years ago. Most geologists, including Christian old-earth creationists, believe that the strata were laid down over hundreds of millions of years. What better way, then, to equip myself for the study of the earth's age, than to spend nine days around the Grand Canyon (six of them in it) with ICR geologists, physicists, and biologists. ICR has been conducting these tours for over ten years, so everything runs extremely well. Though I was a member of a hiking group, they also sponsored a group going down the Colorado River in rafts and a group touring the whole area by bus. All were accompanied by ICR scientists. Each day we received mini-lectures from the leaders as we broke for lunch or at points of interest along the trail. Topics included the sudden appearance of fossils,

the complexity of the earliest canyon fossils such as the trilobites, the age of the earth's magnetic fields, the role of continental drift in the onset of the flood, where does the ice age fit into a young-earth model, water- canopy theories, carbon-14 dating, and the dating of the Grand Canyon basalts (rock layers derived from ancient lava flows).

We examined many evidences for rapid formation of rock layers, which is essential to the young-earth model. We spent nearly two hours at the Great Unconformity between the Tapeats Sandstone, which is dated at about 500 million years old, and the Hakatai Shale, which is dated at about 1.5 billion years old. These two formations were formed nearly one billion years apart in time, yet one lies right on top of the other. Nearly a billion years is missing between them! The night before entering the canyon for the hike, I wrote these words in my journal:

> *If these strata are the result of Noah's flood and the canyon carved soon afterward, the canyon stands as a mighty testament to God's power, judgment, and grace. Even if not, what a wonderful world our Lord has sculpted for us to inhabit. His love is bigger than I can grasp, bigger—infinitely bigger—than even the Grand Canyon!*

Evidence of Noah's Flood in the Grand Canyon

One of the more obvious formations in the Grand Canyon is the Coconino Sandstone. This prominent formation is found only a few hundred feet below the rim of the canyon and forms one of the many cliffs in the canyon. Its distinctive yellow cream color makes it look like a thick layer of icing between two cake layers.

Evolutionary geologists have described this sandstone as originating from an ancient desert. Remnants of sand dunes can

be seen in many outcrops of the formation in a phenomenon called cross-bedding. There are many footprints found in this sandstone that have been interpreted as lizards scurrying across the desert.

These footprints would seem to pose a major challenge to young- earth geologists who need to explain this formation in the context of Noah's flood. Since there are many flood-associated layers both above and below this sandstone, there is no time for a desert to form in the middle of Noah's flood. Recent investigations, however, have revealed that the cross-bedding can be due to underwater sand dunes and that some footprints are actually better explained by amphibians moving across sandy-bottomed shallow water. Perhaps this formation can be explained by sand deposited under water.

This explanation does not entirely solve the young-earth geologists' problem, because it is still difficult to determine where the amphibians came from and how they could be crawling around in shallow waters on top of sediments that would have to be deposited halfway through a world-wide catastrophic flood. But let's go on to another flood evidence. Earlier, I mentioned the Great Unconformity. This can be observed throughout the Grand Canyon where the Tapeats Sandstone, a Cambrian formation estimated to be 570 million years old, rests on top of any one of a number of Precambrian strata ranging from one to two billion years old.

Our group observed a location in the Unconformity where the time gap between the two layers is estimated to be one billion years. It is very unusual, even for evolutionary geology, for two layers from periods so far apart, in this case one billion years, to be right on top of one another. It is hard to imagine that no sediments were deposited in this region for over a billion years! Evolutionary geologists believe that the upper sandstone was deposited over hundreds of thousands of years in a marine environment. However, we observed large rocks and boulders from a neighboring formation mixed into the

bottom few feet of the Tapeats Sandstone. This indicates tremendous wave violence capable of tearing off these large rocks and transporting them over a mile before being buried. This surely fits the description of a flood rather than slow deposition. We spent nearly two hours at this location and we were all quite impressed with the clear evidence of catastrophic origin of the Tapeats Sandstone.

That the Coconino Sandstone likely had a water-deposited origin and that the Tapeats Sandstone was laid down in a great cataclysm are necessary elements for a young-earth flood geology scenario for the Grand Canyon.

The Erosion and Formation of the Grand Canyon

Perhaps one of the most interesting questions about the Grand Canyon is how it was cut out of rock in the first place. The answer to this question has a lot to do with how old the canyon is supposed to be. The puzzling factor about the Grand Canyon is that the Colorado River cuts directly through an uplifted region called the Kaibab Upwarp. Normally a river would be expected to flow towards lower elevation, but the Colorado has cut right through an elevated region rather than going around it.

The explanation you will still find in the National Park literature is that the Colorado began to cut the Grand Canyon as much as 70 million years ago, before the region was lifted up. As the uplift occurred, the Colorado maintained its level by cutting through the rock layers as they were lifted up. Thus the Grand Canyon was cut slowly over 70 million years! In recent years, however, evolutionary geologists as well as old-earth creationists have abandoned this scenario because it just isn’t supported by the evidence. A major reason is that even at the present rate of erosion in the Grand Canyon, it would take as little as 71,000 years to erode the amount of

rock currently missing from the Grand Canyon. Also, all of the sediment that would have to be eroded away during 70 million years has not been located. And lastly, evolutionists' own radiometric dates of some of the surrounding formations indicate that the Colorado River has been in its present location for less than five million years.

Some old-earth geologists have tentatively adopted a new theory that requires a few rather strange twists. This theory suggests that the Colorado River flowed through the area of the Grand Canyon only recently. The Colorado originally was forced in the opposite direction of its current flow by the Kaibab Upwarp and actually flowed southeast toward the Gulf of Mexico. This ancestral Colorado River may have occupied the course of what is now the Little Colorado River, only in the opposite direction of its current course.

This theory further suggests that about five million years ago a westward-flowing stream began to erode, upstream or towards the east, over what is today the Grand Canyon, through the Upwarp and capturing the ancestral Colorado River! If this sounds a little fantastic to you, you're probably right. In a recent volume on the Grand Canyon, a geologist, while maintaining this theory to be solid, admits a lack of hard data and that what evidence there is, is circumstantial. Into this controversy step the young-earth creationists, who need to explain how the Grand Canyon was formed, strata and all, in less than 5,000 years. They suggest, quite reasonably I think, that the canyon was formed when the Kaibab Upwarp acted as a dam for three lakes occupying much of Utah, Colorado, and northern Arizona. These lakes catastrophically broke through the Upwarp, and the Grand Canyon was cut out of solid rock by the drainage of these lakes through this breach in the dam. A small canyon was formed this way recently as a result of the eruption of Mount St. Helens. Grand Coulee in Washington state was formed when an ice dam broke at the end of the Ice Age. This breached-dam theory answers a lot of questions the old-

earth theories do not, and it needs to be considered.

Uncertainties of Dating the Grand Canyon

I have noted that old-earth creationists believe that the Grand Canyon strata were formed over hundreds of millions of years and that the canyon itself was carved out in less than five million years. Young-earth creationists, on the other hand, believe that the strata of the canyon were formed as a result of Noah's flood and that the canyon was carved out catastrophically less than five thousand years ago. A critical question to ask is, how can we know how old the rocks in the Grand Canyon really are? The usual solution is to date the rocks by radiometric dating methods, which are supposed to be capable of dating rocks billions of years old. Rocks of volcanic origin are the best ones to use in dating rocks this way, since radiometric elements are plentiful in them. The Grand Canyon has volcanic rocks near the bottom and at the top. ICR has been involved in a project over the last several years to date these volcanic rocks. Their results not only call into question the age of the Grand Canyon but also the reliability of radiometric dating.

The youngest rocks in the Grand Canyon are recognized by all to be volcanic rocks in western Grand Canyon that flowed from the top of and into the canyon. The oldest rocks that have been dated are volcanic rocks called the Cardenas Basalt, a Precambrian formation near the bottom of the canyon. The rubidium- strontium method, however, has dated the Cardenas basalt at one billion years and the lava flow on top of the canyon at 1.3 billion years. This is clearly impossible! Rocks on the bottom of the canyon are 300 million years younger than very recent rocks on the very top of the canyon! These dates were obtained by ICR from samples they sent to several independent dating labs. Something is amiss, either in the interpretation of the rocks, the dating methods, or both.

As we have seen, ICR scientists have come a long way in

showing that many of the Grand Canyon strata could have formed rapidly, that erosion of the canyon by the Colorado River has not been going on for tens of millions of years, and that there are significant problems with the dating of the canyon.

However, there are still significant questions that remain to be answered if the young-earth model is to be taken seriously by old- earth geologists. For example, why are there no vertebrates among the fossils of the ocean floor communities of the Grand Canyon strata when vertebrates inhabit today's ocean floors? How did the many different kinds of sediments in the Grand Canyon (limestones, sandstones, shales, mudstones, siltstones, etc.) find their way to Northern Arizona as a result of one catastrophe and become so neatly stratified with little mixing? I raise these questions only to indicate that there is much work to be done. I also want you to realize that when someone asks me whether the flood of Noah created the Grand Canyon, I have to say that I don't know. And that's okay! The creation was a real historical event, Adam and Eve were real people, and the flood of Noah was real history as well. But finding the physical signs of these events can be tricky business. We need to encourage scientific investigation from both a young-and old-earth perspective because the testimony of God's word and His revelation from nature will ultimately be in harmony. It may just be hard to discern what that harmony is right now.

Sociobiology: Evolution,

Genes and Morality – A Christian Perspective

Dr. Bohlin looks at the basic tenets of sociobiology from a biblical worldview perspective. Looking at them as a scientist and a Christian, he finds a lack of consistency and obvious paradoxes in this way of looking at our world.

 *This article is also available in Spanish.*

In 1981 I wrote an article for *Christianity Today*, which they titled "Sociobiology: Cloned from the Gene Cult."(1) At the time I was fresh from a graduate program in population genetics and had participated in two graduate seminars on the subject of sociobiology. You might be thinking, "What in the world is sociobiology, and why should I care?"

That's a good question. Sociobiology explores the biological basis of all social behavior, including morality. You should care because sociobiologists are claiming that all moral and religious systems, including Christianity, exist simply because they help promote the survival and reproduction of the group. These sociobiologists, otherwise known as *evolutionary ethicists*, claim to be able to explain the existence of every major world religion or belief system, including Christianity, Judaism, Islam, and even Marxism and secular humanism, in terms of natural selection and evolution. E. O. Wilson, a Harvard biologist and major advocate of sociobiology, claims that scientific materialism (a fully evolutionary worldview) will eventually overcome both traditional religion and any other secular ideology. While Wilson does admit that religion in some form will always exist, he suggests that theology as an explanatory discipline will cease to exist.

The First Paradox

While the arrogance of sociobiology is readily apparent, it contains a number of paradoxes. The first paradox is simply that the worldview of sociobiology offers nothing but despair when taken to its logical conclusion, yet it continues to gain acceptance in the academic community.

Four Foundational Principles of Sociobiology

The despair of the sociobiological worldview and the ultimate lack of meaning it presents are derived from what I consider the four foundational principles of sociobiology. The first principle is the assertion that human social systems have been shaped by evolutionary processes. Human societies exist in their present form because they work, or at least have worked in the past, not because they are based on any kind of revelation.

Second, there is what sociobiologist Robert Wallace called the **reproductive imperative**.(2) The ultimate goal of any organism is to survive and reproduce. Species survival is the ultimate goal. Moral systems exist because they ultimately promote human survival and reproduction.

Third, the individual—at least in respect to evolutionary time—is meaningless. Species, not individuals, evolve and persist through time. E.O. Wilson stated that the organism, your body, is simply DNA's way of making more DNA.(3)

Fourth, all behavior is therefore selfish, or at least pragmatic, at its most basic level. We love our children because love is an effective means of raising effective reproducers. Wilson spells out the combined result of these principles quite clearly in his book *On Human Nature* when he says that

> *…no species, ours included, possesses a purpose beyond the imperatives created by its own genetic history (i.e.,*

> *evolution)….we have no particular place to go. The species lacks any goal external to its own biological nature.(4)*

Wilson is saying that since humans have been shaped by evolution alone, they have no purpose beyond survival and reproduction. Even Wilson admits that this is an unappealing proposition.

Hope and Meaning

Since sociobiologists claim that all behavior is ultimately selfish, that an organism's only goal or purpose is to survive and reproduce, and that it is species survival, not individual survival, that is ultimately required, personal worth and dignity quickly disappear. The responses of sociobiologists when they are confronted with this conclusion have always been curious to me. I distinctly remember posing a question about hope and purpose to a graduate seminar composed of biology students and faculty. I asked, "Let's suppose that I am dead and in the ground, and the decomposers are doing their thing. What difference does it make to me now whether I have reproduced or not?" My point was that if death is the end with a capital "E", who cares whether or not I have reproduced? After an awkward silence, one of the faculty answered, "Well, I guess that it doesn't matter at all." In response, I asked, "Don't you see, we were just discussing how the only purpose in life is to survive and reproduce, but now you admit that this purpose is really an illusion. How do you go on with your life when you realize that it really doesn't matter what you do? That there is no point to any of it?" After an even longer silence, the same faculty member said, "Well, I suppose that those who will be selected for in the future will be those who know there is no purpose in life, but will live as if there is."

To say the least, I was stunned by the frankness of his response. He was basically saying that the human race will be

forced to live with a lie—the illusion of hope and meaning. What was even more unsettling, however, was the fact that no one disagreed or offered even the most remote protest. Apart from myself, everyone there accepted evolution as a fact, so they were forced to accept this conclusion. (I would find out later that at least a couple of them didn't like it.)

A professor of philosophy at a university in Minnesota recently answered my challenge by saying that maybe there are two different kinds of hope and meaning: hope and meaning in small letters (meaning survival and reproduction) and Hope and Meaning in capital letters (meaning ultimate worth and significance). We all have hope and meaning in small letters, and maybe there just isn't any in capital letters. So what? But that was precisely my point. Hope and meaning in small letters is without significance unless Hope and Meaning in capital letters really exists.

Three Responses

Over the years I have noted three responses of evolutionists to the stark realization that their worldview offers no hope or meaning in their lives. The first is strong disagreement with the conclusions of sociobiology without strong reasons for disagreeing. They don't like the result, but they find it difficult to argue with the basic principles. As evolutionists, they agree with evolution, but they don't want to believe that a meaningless existence is the end result.

The second response is simple acceptance. These evolutionists agree that there is no purpose or meaning in life. They just have to accept it, as the professor in the story did. Their commitment to an evolutionary worldview is total. I find this attitude most prevalent among faculty and graduate students at secular institutions. There is an almost eerie fatalism that stoutly embraces the notion that one's dislike of a theory is not sufficient cause to raise questions about it, especially when it is based on "sound" evolutionary principles.

The third response is an existential leap for meaning and significance when both have been stripped away. This leap is aptly illustrated by evolutionist Robert Wallace at the end of his book, *The Genesis Factor*. He writes:

> *I do not believe that man is simply a clever egotist, genetically driven to look after his own reproduction. He is that. But he is at least that. He is obviously much more. The evidence for this is simple and abundant. One need only hear the Canon in D Major by Johann Pachelbel to know that there are immeasurable depths to the human spirit….I am sorry for the person who has never broken into a silly dance of sheer exuberance under a starry sky: perhaps such a person will be more likely to interpret the message of this book more narrowly. The ones who will find it difficult to accept the narrow view are those who know more about the joy of being us. My biological training is at odds with something that I know and something that science will not be able to probe, perhaps because the time is now too short, perhaps because it is not measurable. I think our demise, if it occurs, will be a loss, a great loss, a great shame in some unknown equation.(5)*

What Wallace is saying in this passage is that something is missing, and it can't be found within the confines of the evolutionary worldview. So look wherever you can!

Some may argue that those who have trouble with the loss of hope and meaning are taking all this too seriously. I don't agree. On the contrary, I believe that they are being very consistent within their worldview. If everything has evolved, and there is nothing outside of mere biology to give meaning and significance to life, then we must live in despair, denial, or irrational hope.

Sociobiology is gaining in popularity because of the scientific community's strong commitment to evolution. If

something follows logically from evolutionary theory, which I believe sociobiology does, then eventually all who consider themselves evolutionists will embrace it, whether it makes them comfortable or not. They will have no other rational choice.

The Second Paradox

In reflecting on the notion that all human societies and moral systems should have characteristics that seem to have evolved, I am led to a second paradox for sociobiology. The first paradox was that, despite the loss of hope and meaning in the context of a completely naturalistic worldview, sociobiology has continued to grow in influence. The second paradox involves Christianity. Since Christianity is based on revelation, it should be antithetical to or unexplainable by sociobiology, at least in some crucial areas.

It is not unreasonable to expect that some aspects of Christian morality would be consistent with a sociobiological perspective, since Christians in small and large groups do work for the betterment of the group as a whole, and the argument could be made that the survival of individuals is thus increased. However, if Christianity's claim to be based on revelation from a transcendent God is true, I would be surprised, indeed extremely disappointed and confused, if everything in Christianity's moral standards also made sense from a sociobiological perspective. What little I have seen in the way of an evaluation of Christianity from E.O. Wilson and other sociobiologists is a poor caricature of true Christianity.

I would like to offer a few suggestions for consideration. William Irons, in a discussion of theories of the evolution of moral systems, comments that nepotism is a very basic prediction of evolutionary theory.(6) Humans should be expected to be less competitive and more helpful towards relatives than towards non- relatives. He cites numerous

studies to back up his claim that this prediction, more than any other sociobiological prediction, has been extensively confirmed.

To be sure, the New Testament holds to very high standards concerning the importance of the family. Church leaders are to be judged first by how they conduct and relate themselves to their families (1 Tim. 3:12; Tit 1:6). Yet Jesus makes it quite clear that if there is any conflict between devotion to Him and devotion to our family, the family comes second. He said,

> *Do not think that I came to bring peace on the earth; I did not come to bring peace, but a sword. For I came to set a man against his father, and a daughter against her mother, and a daughter-in-law against her mother-in-law; and a man's enemies will be the members of his household. He who loves his father or mother more than Me is not worthy of Me. And he who does not take his cross and follow after Me is not worthy of Me. He who has found his life shall lose it, and he who has lost his life for My sake shall find it. (Matt. 10:34-39).*

In other passages Jesus gives promises that if we give up our families and possessions for His sake, then we will receive abundantly more in this life and the next, along with persecutions (Mark 10:29,30). Jesus Himself preferred the company of those who do the will of God to His own mother and brothers (Matt. 12:46-50). The clear message is that, while our families are important, our relationship with the living God comes first, even if members of our family foce us to choose between God and them. Sociobiology may respond by saying that perhaps the benefit to be gained by inclusion in the group will compensate for the family loss, but how can the loss of an individual's entire genetic contribution to the next generation be explained away by any evolutionary mechanism?

Common Ground

So far I have concentrated my remarks in areas where a Christian worldview is in sharp contrast with the evolutionary worldview of the sociobiologists. Now I would like to explore an area of curious similarity.

While Christianity should not be completely explainable by sociobiology, there are certain aspects of Christian truth that are quite compatible with it. I have always been amazed by the curious similarity between the biblical description of the natural man or the desires of the flesh, and the nature of man according to evolutionary principles. Both perceive man as a selfish creature at heart, looking out for his own interests. It is not "natural" for a man to be concerned for the welfare of others unless there is something in it for him.

Sociobiology seems to be quite capable of predicting many of the characteristics of human behavior. Scripture, on the other hand, informs us that the natural man does not accept the things of the Spirit, that they are foolishness to him (1 Cor. 2:14). I have wondered if our sin nature is somehow enveloped by biology, or, to be more specific, genetics. Could it be that some genetic connection to our sin nature at least partially explains why "there is none righteous, there is none who understands, there is none who seeks for God" (Rom. 3:10,11)? Does a genetic transmission of a sin nature help explain why "all have sinned and fall short of the glory of God" (Rom. 3:23)? Is this why salvation can only be through faith, that it is not of ourselves but is a gift of God, not a result of works (Eph. 2:8, 9)? Is this why the flesh continues to war in our bodies so that we do the thing which we do not want to do, why nothing good dwells in me, and why the members of my body wage war against the law of my mind (Rom. 7:14-25)?

If there is a genetic component to our sin nature, it seems reasonable to assume that only the Spirit of God can overcome the desires of the flesh and that this struggle will continue

in the believer until he or she is changed, until we see God face to face (1 Cor. 13:12; 15:50-58).

I ask these questions not thinking that I have come upon some great truth or the answer to a long-standing mystery, but simply looking for some common ground between the truth of Scripture and the truth about human nature we may be discovering from the perspective of sociobiology. All truth is ultimately God's truth. While I certainly do not embrace the worldview of the sociobiologist, I realize that there may be some truth that can be discovered by sociobiologists that can be truly captured to the obedience of Christ (2 Cor. 10:5).

When I wrote that article for *Christianity Today* in 1981, I closed with this paragraph:

> *To know what to support and what to oppose, Christians involved in the social and biological sciences must be effective students of sociobiology. The popularity of sociobiology has gone unnoticed for too long already. We need precise and careful study as well as a watchful eye if we are to take every thought captive to the obedience of Christ."(7)*

Notes

1. Raymond G. Bohlin, "Sociobiology: Cloned from the Gene Cult," *Christianity Today,* 23 January (1981): 16-19.

2. Robert Wallace, *The Genesis Factor* (New York: Morrow and Co.,1979).

3. E. O. Wilson, *Sociobiology: The New Synthesis* (Cambridge,Mass.: Harvard University Press, 1975), 3.

4. E.O. Wilson, *On Human Nature* (Cambridge, Mass.: Harvard University Press, 1978) 2-3.

5. Ibid., 217-218. Emphasis mine.

6. William Irons, “How Did Morality Evolve?” *Zygon* 26 (1991): 49-89.

7. Bohlin, “Sociobiology,” 19.

The Epidemic of Sexually Transmitted Diseases – A Christian Solution

Written by Dr. Ray Bohlin

Dr. Bohlin looks at data describing the huge increase in STDs in American, considers the causes of this increase, and proposes a Christian solution firmly rooted in a biblical worldview.

An STD Epidemic

Sexually Transmitted Diseases (or STDs) are at unprecedented and epidemic proportions. Thirty years of the sexual revolution is paying an ugly dividend. While a few STDs can be transmitted apart from sex acts, all are transmissible by the exchange of bodily fluids during intimate sexual contact. I want to discuss the severity of the problem as well as what must be done if we are to save a majority of the next generation from the shame, infertility, and sometimes death, that may result from STDs.

The information I am about to share is from data gathered by the Medical Institute for Sexual Health out of Austin, Texas.(1) All of these statistics are readily available from

reputable medical and scientific journals.

Today, there are approximately 25 STDs. A few can be fatal. Many women are living in fear of what their future may hold as a result of STD infection. It is estimated that 1 in 5 Americans between the ages of 15 and 55 are currently infected with one or more STDs, and 12 million Americans are newly infected each year. That’s nearly 5% of the entire population of the U.S. Of these new infections, 63% are in people less than 25 years old.

This epidemic is a recent phenomenon. Some young people have parents who may have had multiple sexual partners with relative impunity. They may conclude that they too are safe from disease. However, most of these diseases were not around 20 to 30 years ago. Prior to 1960, there were only two significant sexually transmitted diseases: syphilis and gonorrhea. Both were easily treatable with antibiotics. In the sixties and seventies this relatively stable situation began to change. For example, in 1976, chlamydia first appeared in increasing numbers in the United States. Chlamydia, particularly dangerous to women, is now the most common STD in the country. Then in 1981, human immunodeficiency virus (HIV), the virus which causes AIDS, was identified. By early 1993, between 1 and 2 million Americans were infected with AIDS, over 12 million were infected worldwide, and over 160,000 had died in the U.S. alone. Over 10% of the total U.S. population, 30 million people, are infected with herpes.

In 1985, human papilloma virus (HPV), began to increase. This virus will result in venereal warts and will often lead to deadly cancers. In 1990, penicillin resistant-strains of gonorrhea were present in all fifty states.

By 1992 syphilis was at a 40-year high. As of 1993, pelvic inflammatory disease (PIV), which is almost always caused by gonorrhea or chlamydia, was affecting 1 million new women each year. This includes 16,000 to 20,000 teenagers. This

complication causes pelvic pain and infertility and is the leading cause of hospitalization for women, apart from pregnancy, during the childbearing years.

Pelvic inflammatory disease can result in scarred fallopian tubes which block the passage of a fertilized egg. The fertilized egg, therefore, cannot pass on to the uterus and the growing embryo will cause the tube to rupture. By 1990, there was a 400% increase in tubal pregnancies, most of which were caused by STDs. Even worse is the fact that 80% of those infected with an STD don’t know it and will unwittingly infect their next sexual partner.

The Medical Facts of STDs

Syphilis is a terrible infection. In its first stage, the infected individual may be lulled into thinking there is little wrong since the small sore will disappear in 2 to 8 weeks. The second and third stages are progressively worse and can eventually lead to brain, heart, and blood vessel damage if not diagnosed and treated. The saddest part is that syphilis is 100% curable with penicillin, yet there is now more syphilis than since the late 1940s, and it is spreading rapidly.

Chlamydia, a disease which only became common in the mid-1970s, infects 20 to 40% of some sexually active groups including teenagers. In men, chlamydia is usually less serious; with females, however, the infection can be devastating. An acute chlamydia infection in women will result in pain, fever, and damage to female organs. A silent infection can damage a woman’s fallopian tubes without her ever knowing it. A single chlamydia infection can result in a 25% chance of infertility. With a second infection, the chance of infertility rises to 50%. This is double the risk of gonorrhea.

The human papilloma virus, or HPV, is an extremely common STD.

One study reported that at the University of California, Berkeley, 46% of the sexually active coeds were infected with HPV. Another study reported that 38% of the sexually active females between the ages of 13 and 21 were infected. HPV is the major cause of venereal warts; it can be an extremely difficult problem to treat and may require expensive procedures such as laser surgery.

The human papilloma virus can result in precancer or cancer of the genitalia. By causing cancer of the cervix, this virus is killing more women in this country than AIDS, or over 4,600 women in 1991. HPV can also result in painful intercourse for years after infection even though other visible signs of disease have disappeared.

And of course there is the human immunodeficiency virus, or HIV, the virus that causes AIDS. The first few cases of AIDS were only discovered in 1981; now, in the U.S. alone, there are between 1 and 2 million infected with this disease. As far as we know, all of these people will die in the next ten years. As of early 1993, 160,000 had already died.

A 1991 study at the University of Texas at Austin showed that 1 in 100 students who had blood drawn for any reason at the university health center was HIV infected. While the progress of the disease is slow for many people, all who have the virus will be infected for the rest of their life. There is no cure, and many researchers are beginning to despair of ever coming up with a cure or even a vaccine (as was eventually done with polio). In 1992, 1 in 75 men was infected with HIV and 1 in 700 women. But the number of women with AIDS is growing. In the early years of the epidemic less than 2% of the AIDS cases were women. Now the percentage is 12%.

Teenagers Face a Greater Risk from STDs

Teenagers are particularly susceptible to sexually transmitted diseases or STDs. This fact is alarming since more teens are

sexually active today than ever before. An entire generation is at risk and the saddest part about it is that most of them are unaware of the dangers they face. Our teenagers must be given the correct information to help them realize that saving themselves sexually until marriage is the only way to stay healthy.

The medical reasons for teens' high susceptibility to STDs specifically relates to females. The cervix of a teenage girl has a lining which produces mucus that is a great growth medium for viruses and bacteria. As a girl reaches her 20s or has a baby, this lining is replaced with a tougher, more resistant lining. Also during the first two years of menstruation, 50% of the periods occur with-out ovulation. This will produce a more liquid mucus which also grows bacteria and viruses very well. A 15-year-old girl has a 1-in-8 chance of developing pelvic inflammatory disease simply by having sex, whereas a 24-year-old woman has only a 1- in-80 chance in that situation.

Teenagers do not always respond to antibiotic treatment for pelvic inflammatory disease, and occasionally such teenage girls require a hysterectomy. Teenage infertility is also an increasing problem. In 1965, only 3.6% of the married couples between ages 20 and 24 were infertile; by 1982, that figure had nearly tripled to 10.6%. The infertility rate is surely higher than that now with the alarming spread of chlamydia.

Teenagers are also more susceptible to human papilloma virus, HPV. Rates of HPV infection in teenagers can be as high as 40%, whereas in the adult population, the rate is less than 15%. Teenagers are also more likely than adults to develop precancerous growths as a result of HPV infection, and they are more likely to develop pelvic inflammatory disease.

Apart from the increased risk from STDs in teens, teenage pregnancy is also at unprecedented levels, over 1 million pregnancies, and 400,000 abortions in 1985. Abortion is not a

healthy procedure for anyone to undergo, especially a teenager. It is far better to have not gotten pregnant. Oral contraceptives are not as effective with teenagers, mainly because teens are more apt to forget to take the pill. Over a one-year period, as many as 9 to 18% of teenage girls using oral contraceptives become pregnant.

Our teenagers are at great risk. In a society that has abandoned God's design for healthy meaningful sexual expression within marriage, our children need to be told the truth about the dangers of STDs.

Is "Safe Sex" Really the Answer?

I must now take a hard look at the message of "safe sex" which is being taught to teens at school and through the media across the country.

Some people believe that if teens can be taught how to use contraception and condoms effectively, that rates of pregnancy and STD infection will be reduced dramatically. But the statistics and common sense tell us otherwise. At Rutgers University, the rates of infection of students with STD varied little with the form of contraception used. For example, 35 to 44% of the sexually active students were infected with one or more STDs whether they used no contraceptive, oral contraceptive, the diaphragm, or condoms. It is significant to note that condoms, the hero of the "safe sex" message, provided virtually no protection from STDs.

Will condoms prevent HIV infection, the virus that causes AIDS? While it is better than nothing, the bottom line is that condoms cannot be trusted. A study from Florida looked at couples where one individual was HIV positive and the other was negative. They used condoms as protection during intercourse. Obviously these couples would be highly motivated to use the condoms properly, yet after 18 months, 17% of the previously uninfected partners were now HIV positive. That is

a one-in-six chance, the same as in Russian roulette. Not good odds!

Condoms do not even provide 100% protection for the purpose for which they were designed: prevention of pregnancy. One study from the School of Medicine Family Planning Clinic at the University of Pennsylvania reported that 25% of patients using condoms as birth control conceived over a one-year period. Other studies indicate that the rate of accidental pregnancy from condom-protected intercourse is around 15% with married couples and 36% for unmarried couples.

Condoms are inherently untrustworthy. The FDA allows one in 250 to be defective. Condoms are often stored and shipped at unsafe temperatures which weakens the integrity of the latex rubber causing breaks and ruptures. Condoms will break 8% of the time and slip off 7% of the time. There are just so many pitfalls in condom use that you just can't expect immature teenagers to use them properly. And even if they do, they are still at risk.

Studies are beginning to show that school-based sex education that includes condom use as the central message does not work. A study in a major pediatric journal concluded that "the available evidence indicates that there is little or no effect from school-based sex-education on sexual activity, contraception, or teenage pregnancy."(2) This study evaluated programs that emphasized condoms. Over $3 billion dollars has been spent on sex- education programs emphasizing condoms with little or no effect! In addition, programs that emphasize condoms tend to give a false sense of security to sexually active students and make those students who are not having sex feel abnormal. Hardly the desired result!

The list of damages from unmarried adolescent sexual activity is long indeed. Apart from the threat to physical health and fertility, there is damage to family relationships, self-confidence and emotional health, spiritual health, and future

economic opportunities due to unplanned pregnancy. Condom-based sex-education does not work.

Saving Sex for Marriage is the Common Sense Solution.

I have been discussing the epidemic of sexually transmitted diseases that is running rampant in this country and around the world. Diseases such as chlamydia, human papilloma virus, herpes, hepatitis B, trichomonas, pelvic inflammatory disease, and AIDS have joined syphilis and gonorrhea in just the last 30 years. There is no question that the fruits of the sexual revolution, or sexual convulsion as one author put it, have been devastating. I have also shown how our teenagers are at a greater risk for sexually transmitted diseases than are adults and that sex-education based on condom use is ineffective and misleading. There is only one message that offers health, hope, and joy to today's teenagers. We need to teach single people to save intercourse for marriage.

Sex is a wonderful gift, but if uncontrolled, it has a great capacity for evil as well as good. Our bodies were not made to have multiple sex partners. Almost all risk of STD and out of wedlock pregnancy can be avoided by saving intercourse for marriage. And it can be done.

Statistics show clearly that in schools that teach a sex education program that emphasizes saving intercourse for marriage, the teen pregnancy rate drops dramatically in as little as one year. In San Marcos, California, a high school used a federally funded program ("Teen Aid") which emphasizes saving intercourse until marriage. Before using the program there were 147 pregnancies out of 600 girls. Within two years, the number of pregnancies plummeted to 20 out of 600 girls.(3) In Jessup, Georgia, upon instituting the "Sex Respect" program, the number of pregnancies out of 340 female students dropped from 17 to 13 to 11 to 3 in successive years.

Delaying intercourse until teens are older is not a naive proposal. Over 50% of the females and 40% of the males ages 15 to 19 have not had intercourse. While not a majority, they are living proof that teens can control their sexual desires. Current condom-based sex-education programs basically teach teenagers that they cannot control their sexual desires, and that they must use condoms to protect themselves. It is not a big leap from teenagers being unable to control their sexual desires to being unable to control their hate, greed, anger, and prejudice. This is not the right message for our teenagers! Teenagers are willing to discipline themselves for things they want and desire and are convinced are beneficial. Girls get up early for drill team practice. Boys train in the off-season with weights to get stronger for athletic competition. Our teens can also be disciplined in their sexual lives if they have the right information to make logical choices. Saving sex for marriage is the common sense solution. In fact, it is the only solution. We don't hesitate to tell our kids not to use drugs, and most don't. We tell our kids it's unhealthy to smoke, and most do not. We tell our kids not to use marijuana, and most do not.

It is normal and healthy not to have sex until marriage. Sexually transmitted diseases are so common that it is not an exaggeration to say that most people who regularly have sex outside of marriage will contract a sexually transmitted disease. Not only is saving sex for marriage the only real hope for sexual health, it is God's design. God has said that our sexuality is to blossom within the confines of a mutually faithful monogamous relationship. What we are seeing today is the natural consequence of disobedience. We need to reeducate our kids not just in what is best, but in what is right.

Notes

1. Medical Institute for Sexual Health, P.O. Box 4919, Austin, TX 78765.

2. I.W. Stout, et al., *Pediatrics*, 1989, 83:376-79.

3. Joe S. McIlhaney, Jr., *Safe Sex* (Grand Rapids, Michigan; Baker Book House, 1991), p. 86.

Darwin on Trial: A Lawyer Finds Evolution Lacking Evidence

Darwin on Trial is the title of a book on evolution that has ruffled the feathers of the secular scientific community. Though a Christian, author Philip Johnson critiques evolutionary theory from a secular standpoint as he examines the philosophical games many scientists play to protect their evolutionary ideology.

Evolution as Fact and Theory

Johnson, a law professor at the University of California at Berkeley, attacks head-on the often-heard statement that evolution is both a fact and a theory, an evolutionary dogma that has been a major source of confusion for a long time. Evolution is a fact, Darwinists say, in that they know that evolution has occurred. It is a theory in that they are far from understanding the mechanisms by which evolution has occurred. In the eloquent words of evolutionist Stephen J. Gould,

> *Evolution **is** a theory. It is also a fact. And facts and theories are different things, not rungs in a hierarchy of increasing certainty. Facts are the world's data. Theories*

> *are structures of ideas which explain and interpret facts. Facts do not go away while scientists debate rival theories for explaining them. Einstein's theory of gravitation replaced Newton's, but apples did not suspend themselves in mid-air pending the outcome. And human beings evolved from apelike ancestors whether they did so by Darwin's proposed mechanism or by some other, yet to be discovered. (Evolution as Fact and Theory)*

There are numerous problems with this explanation. First, if evolution is a fact, then evolution is equivalent to data. This hardly seems appropriate. Second, the comparison of evolution to gravity is misleading. We can go into any apple orchard and observe apples falling from trees. But where do we go to observe humans evolving from apelike ancestors? Apples falling from trees fits into the category of science we can term **operations science** which utilizes data that are repeatable and observable at any time. Humans evolving from apelike ancestors, however, would fall under the category of **origins science**. Origins science involves the study of historical events that occur just once and are not repeatable. We can only assemble what evidence we have and construct a plausible scenario, much like the forensic scientist Quincy did in the old television show. The so-called facts of human evolution, by Gould's own definition, are the fossils and the rock layers they are found in. That humans evolved from apelike ancestors is a theory that attempts to explain and interpret these facts.

Later in the same article Gould states the real definition of fact under which evolution fits. He begins by saying that fact does not necessarily mean absolute certainty. Then he says, "In science, fact' can only mean confirmed to such a degree that it would be perverse to withhold provisional assent.'" In other words, evolution is a fact because a majority of scientists say so, and you are "perverse" if you do not agree. We quickly begin to see that evolution holds a privileged

place in the scientific community, which will go to extraordinary lengths to preserve that status.

A Theory in Crisis

Johnson's book, although the most recent, is not the first to question evolution's status as fact. Michael Denton, an agnostic medical researcher from Australia, caused quite a storm with his 1985 book, *Evolution: A Theory in Crisis*. Denton's point is that orthodox Darwinism has such a stranglehold on the biological sciences that contradictory evidences from fields such as paleontology, developmental biology, molecular biology, and taxonomy are passed off as intramural squabbles about the process of evolution. The "fact" of evolution is never really in question. Like Johnson, Denton points out that Darwinism is not a fact. It is a mechanistic theory that is still without a mechanism. While moths and fruit flies do respond to environmental stimuli, our observations of this process have been unable to shed any light on the means by which we have come to have horses and woodpeckers and wasps. The origin of complex adaptations has remained a mystery. The fossil record is pockmarked with gaps in the most embarrassing places. Darwin predicted innumerable transitional forms between major groups of organisms, yet the few transitions that are suggested are surrounded in controversy. Another "fact" that fails to withstand Denton's scrutiny is the assumption that similar biological structures owe their similarity to a common ancestry. Homology, which studies these similarities, assumes for example that the forelimbs of amphibians, reptiles, birds, and mammals are similar in structure because they evolved from the same source. Denton reveals, however, that these same classes of vertebrates go through remarkably different stages of early embryological development. This was certainly not a prediction of Darwinian evolution. Even more importantly, Denton reports that comparison of the sequences of proteins from different organisms actually supports the pre-Darwin system of

classification, which was based on creationist principles.

Also, the many chemical evolution scenarios are caught in numerous intractable dilemmas that offer little hope of resolution (see *Scientific American*, Feb. 1991).

Rules of Science and Evolution

Another issue that Philip Johnson treats in his book is the fact that the rules of science tend to be stated and followed differently depending on whether you are talking about evolution or creation. Professor Johnson refers specifically to Judge William Overton's decision striking down the Arkansas Creation/Evolution Balanced Treatment law. In his written decision, which was reprinted in its entirety in the prestigious journal *Science*, Judge Overton reiterated five essential characteristics of science that were given by opponents of the bill during the trial. Science, in the judge's opinion, must be:

- *Guided by natural law*
- *Explanatory by reference to natural law*
- *Testable against the empirical world*
- *Tentative in its conclusions—that is, not necessarily the final word*
- *Falsifiable*

Judge Overton decided that creation-science does not meet these criteria since it appeals to the supernatural and is therefore not testable, falsifiable, or explanatory by reference to natural law. Johnson points out that philosophers of science have been very critical of the definitions of science given in the decision and have suggested that the expert witnesses provided by the ACLU attorneys got away with a philosophical snow job. Critics have pointed out that scientists are not the least bit tentative about their basic commitments, especially about their commitment to evolution.

From my own experience, all one has to do is attend any scientific meeting to see that some scientists are anything but tentative about their ideas. Also, scientists study the effects of phenomena (such as gravity) that they cannot explain by natural law. Finally, critics have noted that creation-science, as proposed by the Arkansas law, does make empirical claims (such as a young earth, worldwide flood, special creation). Mainstream science has said these claims are demonstrably false, which raises the interesting question, How can creation-science be both unfalsifiable **and** demonstrably false at the same time? Johnson clearly reveals that what is really being protected by these rules of science is not necessarily evolution, but the philosophical doctrine known as *naturalism*. According to Johnson, "Naturalism assumes the entire realm of nature to be a closed system of material causes and effects, which cannot be influenced by anything from the outside." While this doctrine does not deny the existence of God, it certainly makes Him irrelevant. Science, therefore, becomes our only reliable path to knowledge. The issue as Johnson states it, is

> *…Whether this philosophical viewpoint is merely an understandable professional prejudice or whether it is the objectively valid way of understanding the world. That is the real issue behind the push to make naturalistic evolution a fundamental tenet of society, to which everyone must be converted.*

The consequence of this kind of thinking is that evolution is made the basis of ethical and religious statements, which is precisely what most evolutionists find repulsive about creation.

Darwinist Religion

A frequent refrain from evolutionists is that the evolution/creation debate is actually a collision between

science and religion. If creationists would just realize their view is inherently religious and that evolution is the scientific view, then there would be little to disagree about. Evolution belongs in the science classrooms and creation belongs only in the philosophy and religion classrooms. What gets left behind in this discussion, either intentionally or unintentionally, are the very firm religious implications of atheistic naturalism with evolution as its foundation. We only need to look at a few sources to see the religious nature of evolution. The first source is the blatantly religious statements of certain evolutionists themselves. Philip Johnson quotes the evolutionist William Provine as stating quite categorically that:

- *Modern science, i.e., evolution, implies that there is no purpose, gods, or design in nature.*
- *There are no absolute moral or ethical laws.*
- *Heredity and environment determine all that man is.*
- *When we die, we die, and that is all there is.*
- *Evolution cannot produce a being that is truly free to make choices.*

Statements such as these make it quite clear: the belief that science and religion are different spheres of knowledge is complete nonsense.

A second source that establishes the religious nature of evolution is the attacks of evolutionists on the God of the Bible using evolutionary principles. In his chapter on natural selection, professor Johnson provides an example from evolutionist Douglas Futuyma. Futuyma states that a Creator would never create a bird such as the peacock, whose six feet of bulky feathers make it easy prey for leopards. (Johnson turns the tables, however, by asking why natural selection would favor a peahen that lusts after males with life-threatening decorations.) It has always amazed me that people who claim that there is no God sure seem to have an intimate

knowledge of what He would be like if He did exist. At any rate, if evolution can be used to discredit certain notions about the character of God, then evolution is indeed making religious statements. A third indication of the religious nature of evolution is the knee-jerk reaction of the evolutionary establishment against any statement that even hints that evolution is a tentative theory. In 1984, a group of scientists who are Christians but who do not identify themselves with creation scientists published a booklet entitled *Teaching Science in a Climate of Controversy* and mailed it to thousands of school teachers. The general idea of the booklet was to encourage open-mindedness on certain issues and controversies regarding evolution. Evolutionists quickly chided the publication as a clever disguise of creationism. To quote Johnson, "The pervasive message was that the ASA [American Scientific Affiliation] is a deceitful creationist front which disguises its Biblical literalist agenda under a pretense of scientific objectivity." In other words, anything that smells of God must be creationist and must be stamped out.

Darwinist Education

In the later chapters of Johnson's book, he analyzes the reaction of evolutionists to the challenges that have been leveled against them. It is here that he perhaps makes his greatest contribution. One of these reactions has been to wage what is essentially an evolutionary filibuster in educating the public about evolution. Johnson cites the experience of the British Museum of Natural History when it opened an exhibit on evolution in 1981. The exhibit presented Darwinian evolution as **one** idea and **one** possible explanation. Creation was cited as another view. This tentativeness was too much for some scientists to bear. A firestorm of criticism appeared in the British science journal *Nature*. Many were furious that the museum would actually go public with doubts about evolution, doubts that had previously been reserved for discussion among

evolutionary scientists alone. The criticism was so severe that the museum eventually removed the exhibit and replaced it with a more "traditional" evolution exhibit. One of the Museum's top scientists, Colin Patterson, made a similar reversal concerning his view that he required faith in order to accept evolution. The criticism eventually convinced him to discontinue making these statements public.

In the United States, the Science Framework adopted by the state of California in 1989, which has a significant effect on the content of science textbooks, contained this statement concerning evolution: "[Evolution] is an accepted scientific explanation and therefore no more controversial in scientific circles than the theories of gravitation and electron flow." This assertion is nothing more than an appeal to authority and has nothing to do with legitimate scientific evidence. As a result of this statement, evolution is being included in science textbooks at increasingly lower grade levels. The purpose is clear: if students can be indoctrinated in evolution early enough and often enough, perhaps all this controversy can be avoided.

Conclusion

In summary, I have pointed out that many critical predictions of Darwinian evolution have not been fulfilled. As a result, naturalistic atheism, the underlying philosophy of much of the evolutionary establishment, has been threatened. The response of many evolutionists has been to issue increasingly dogmatic statements that appeal to authority, not to evidence, play semantic word games where evolution is called both a fact and a theory, and wage an educational filibuster aimed at squelching all dissent. The evolutionists are not likely to abandon these tactics anytime soon, but until they do, they can expect even more criticism from scholars such as Professor Philip Johnson.