Why We Believe in Creation (and Not Unguided Evolution)

Dr. Ray Bohlin explains why our understanding of the origins of life is directly related to our understanding of God. A Christian understands that God created us intentionally. We are not the result of some random, evolutionary accident. A consistent biblical worldview will be seen in how we consider the question of creation.

The Historical Nature of Genesis

I am often asked why the creation/evolution controversy is so important. Tempers flare, sometimes explosively, over this issue. Some people think, there are enough problems with the image of evangelicals without creating unnecessary controversies. Is it just a matter of interpreting Genesis? If so, then let the theologians debate the issues and leave me out. But let's not obscure the simple message of the gospel. Others wonder, is it just a scientific argument? If so, then why should I care about the controversy? I'm not a scientist. Well, I think much more is at stake than that. It has to do with the very nature and character of God!

We must realize that the book of Genesis is the foundation of the entire Bible. The word Genesis means "beginnings." Genesis tells the story of the beginning of the universe, solar system, earth, life, man, sin, Israel, nations, and salvation. An understanding of Genesis is crucial to our understanding of the rest of Scripture.

For example, Genesis chapters 1-11 are quoted or referred to more than 100 times in the New Testament alone. And it is over these chapters that the primary battle for the historicity of Genesis rages. All of the first eleven chapters are referred to in the New Testament. Every New Testament author refers

somewhere to Genesis 1-11.

Jesus Himself, on six different occasions, refers to each one of the first seven chapters of Genesis, thus affirming His belief in their historical nature. He refers back to Adam and Eve to defend His position on marriage and divorce in Matthew 19:3-6. He makes His argument a historical one when He says that “from the beginning” God created them male and female. Jesus affirms that Adam and Eve were real people. Jesus’ comments are in an historical context.

Jesus affirms the historicity of Cain and Abel in Matthew 23:29-36. In this passage, Jesus connects the blood of righteous Abel to the blood of the prophet Zechariah. The murder of Zechariah at the door of the Temple was within the last 400 years and was clearly historical. If this was historical, then so was the murder of Abel!

Jesus confirms the historical nature Noah and the Flood in Matthew 24:37-39. The time before Noah is related to the time that Christ returns. If the flood is just a story to communicate a pre-New Testament vision of the gospel, then is Jesus return just another story to communicate some other spiritual truth? The historicity of Genesis 1-11 is tied to many aspects of Jesus’ teachings.

In many ways it is difficult to separate the book of Genesis, even the first eleven chapters, from the rest of Scripture, without literally rejecting the inspiration of Scripture and the divine nature of Jesus. It is hardly possible to assume that Jesus was knowingly deceiving these pre-modern people in order to communicate the gospel in a context they understood.

How can the first 11 chapters be separated from even the rest of Genesis? The time of Abraham has been verified by archaeology. The places, customs, and religions spoken in Genesis related to Abraham are accurate. The story of Abraham begins in Genesis 12. If Genesis 1 is mythology and Genesis 12

history, where does the allegory stop and the history begin in the first 11 chapters? It is all written in the same historical narrative style.

The Nature of the Evolutionary Process

Many believers do indeed call Genesis 1-11 allegory or myth. They boldly declare that God simply used evolution as His method to create! The purpose of the creation account is only to promote God as a transcendent all-powerful God who is completely different from the gods of the surrounding Near East cultures of that time. This is called theistic evolution. Without question, God could create by any means He chose. But is the God of the Scriptures the god of evolution?

My simple answer to that question is **no!** At least not the evolution which is communicated in today's textbooks and university classrooms. The nature of the evolutionary process is contrary to the nature of God.

The principles behind evolution are ideas such as the selfish gene, and survival of the fittest. An offshoot of evolutionary thinking is the relatively new field of sociobiology. In another essay (Sociobiology: Evolution, Genes and Morality), I defined sociobiology as the biological basis for ALL social behavior. In other words, our behaviors are the result natural selection as much as our physical characteristics.

For instance, if you ask a sociobiologist the question, why do we love our children, he or she will answer that "we love our children because it works." It is an effective means to raise productive offspring, so it was "selected for" over time. Ultimately, then, from this perspective, all behavior is selfish. Everything we do is geared toward furthering our own survival and the production and the survival of our own offspring. Our behaviors have been selected over time to aid in our survival and reproduction and that's all.

Evolution is a wasteful, inefficient process. Carl Sagan says that the fossil record is filled with the failed experiments of evolution. Evolutionary history is littered with dead-ends and false starts. Stephen Jay Gould characterizes the nature of the evolutionary process as one of contingency history. Organisms survive primarily by chance rather than some inherent superiority over other organisms. There is no purpose, no goal, no meaning at all.

The question has to be, would God use such a method? A person's character is reflected in his or her work. Not just in what is produced, but the process also is indicative of the mind that is at work. For instance, the paintings of Vincent van Gogh reveal a troubled mind, not just in the subjects he painted but also in the colors he used and character of the brush strokes. And you don't have to be an art critic to see this in his paintings, particularly those just before he took his own life.

God is a person and thus has character. We should see God's character in His work as well as in His method. First, let's take a brief look at the revelation of God's character.

Jesus is the perfect manifestation of God's character. Jesus said, "Anyone who has seen me has seen the Father" (John 14:9-11). Not only that, but Jesus is the Person of the Godhead that brought about the creation. Colossians 1:16 reads, "All things were created by Him, for Him, and through Him." John 1:3—"Nothing came into being apart from Him." Hebrews 1:2—"By Whom and through Whom the worlds were created."

Since Jesus is a person and is also the creator, then if Jesus used evolution as his method to create, then we should see a correlation between the character of Jesus and the process of evolution.

The Personal Character of Jesus the Creator

If Jesus used evolution as His method of creation, then His character must be reconcilable with the evolutionary process. We discussed above the nature of the evolutionary process. Now I want to take a brief look at the character of God. A detailed unveiling of Jesus' character is found in Matthew 5. This is not an ideal we are to strive for, but a picture of what can happen in the life of a believer who is fully yielded to Christ.

In Matthew 5:3, Jesus says, "Blessed are the poor in spirit." This phrase describes one who allowed himself to be trodden down. Jesus exemplified a security in Himself that did not become offended when He was put down. An evolutionarily successful organism seeks its own interests, not the interests of others.

In verse 5, Jesus says, "Blessed are the gentle." The mild, patient and long-suffering are not likely to succeed in an evolutionary world. The meek are pushed aside by the self-assertive. Ultimately it is the strong, the fit and the selfish that are the ones who succeed!

In verse 7, Jesus says, "Blessed are the merciful." The struggle for existence is never motivated by mercy. Mercy could only be tolerated if shown towards a member of the same species that shares a significant proportion of their genes. To be merciful outside your immediate family unit may compromise your survival or the survival of your offspring, neither of which is productive in an evolutionary world.

In verse 9, Jesus says, "Blessed are the peacemakers." Jesus also said we should love our enemies. In many mammals, such as lions and gorillas, the first act of a new dominant male following his ascent to power is to kill the younger offspring sired by the previous dominant male. This has the double

effect of removing offspring from the group that are not his, and bringing their mothers into heat so he can mate with them to produce his own offspring. This is selfish natural selection at work. Where is the mercy, the gentleness, the peacemaking in these events?

The struggle for existence among living organisms today is a result of sin entering a perfect creation and is not the method of bringing that creation into existence.

Romans 8:19-22 reveals that nature is groaning in the pains of childbirth, because of being subjected to futility, for redemption from the curse. Nature is in turmoil. Organisms do struggle for survival. Competition is often fierce. While there are many examples of cooperation in nature, it can always be explained in terms of selfish gain and cooperation is the easiest way to obtain the desired end. Organisms do act selfishly. But ***to hear nature's groaning and interpret it as the song of creation is to be ignorant of both God and nature!***

Some Christians debate the effects of the fall and how far back into earth history the effects can be realized. But the point is that something happened at the fall. This passage makes clear that the creation does not function today as God intended it to and it is not the creation's fault. The creation was subjected to futility because of man's sin.

When we take the time to investigate whether the God revealed in the Scriptures is the same God who created through the evolutionary process as it is currently understood, the answer is clear. The God of the Scriptures is not the god of evolution.

A Modern Twist on Theistic Evolution

In a modern formulation, some theistic evolutionists are declaring that not only **could** God use evolution, but He **must** use some form of evolution to create. These individuals

indicate that there is a “functional integrity” to the universe that God created initially and for God to intervene in any way, is to admit that He made a mistake earlier. And of course, God does not make mistakes. Physics professor Howard van Till from Calvin College describes:

> …a created world that has no functional deficiencies, no gaps in its economy of the sort that would require God to act immediately, temporarily assuming the role of creature to perform functions within the economy of the creation that other creatures have not been equipped to perform.” [*Christian Scholars Review*, vol. XXI:I (September 1991), p. 38].

Diogenes Allen from Princeton Theological Seminary put it this way:

> According to a Christian conception of God as creator of a universe that is rational through and through, there are no missing relations between the members of nature. If, in our study of nature, we run into what seems to be an instance of a connection missing between members of nature, the Christian doctrine of creation implies that we should keep looking for one” [*Christian Belief in a Postmodern World* (Louisville: Westminster /John Knox Press, 1989), p. 53].

A loose paraphrase might be, “If you find evidence of a miracle, you need to keep looking for a naturalistic explanation.” This view of creation seems awfully close to deism or semi-deism. Theistic evolutionists deny this, of course, by reminding us that, unlike deism, they firmly believe that God continuously upholds the universe. If He were to completely withdraw as deism holds, the universe would come apart.

But the Bible, particularly the gospels, is full of miracles. The Lord Jesus was born as a human baby in a stable, He changed water into wine, healed blindness and leprosy, fed

multitudes on scraps of food, raised people from the dead, died on a cross, and rose from the dead Himself. The response is that this is salvation history which is entirely different from natural history. Diogenes Allen put it this way:

> In general we may say that God creates a consistent set of law-like behaviors. As part of that set there are the known physical laws. These laws apply to a wide variety of situations. But in certain unusual situations such as creating a chosen people, revealing divine intentions in Jesus, and revealing the nature of the kingdom of God, higher laws come into play that give a different outcome than normal physical laws which concern different situations. The normal physical laws do not apply because we are in a domain that extends beyond their competence.

It is true that we do not invoke God to account for repeatable observable events such as apples falling from trees. But what could be more unusual and beyond the competence of physical laws than the creation of life, the creation of coded information in DNA, the creation of a human being? Even in this framework, it seems reasonable to assume that these events could also be a part of salvation history. What we end up with, however, is a view that says that the activity of the Creator cannot be detected in any of the workings of nature. Once again, the God of the Scriptures is not the god of evolution.

The Theology of Romans 1

The world of nature that is left to us by those who believe in theistic evolution is indistinguishable from that of the philosophical naturalist or even the pantheist. Whether you accept Genesis 1 and 2 as being historical or not, the clear tenor of the narrative is of a God who interacts with his creation, not one who just lets it unwind according to some preconceived plan. How is a scientist supposed to see God in the creation if all there is, from his perspective, is natural

mechanisms?

The pantheist could see this perspective as compatible with his view of the natural world as well. The pantheist sees god as an impersonal force that is present all throughout nature. god is all and in all. All is one. Matter itself contains the inherent ability to bring about complexity according to the mind which permeates all of nature. Similarly, theistic evolution requires that matter contains within itself, by God's creative design, the full capacity to actualize all of the physical and biological complexities that exist. The distinctions of Christian theism become blurred.

Finally, if God created through evolution, what are we to do with Romans 1:18-20? Paul says:

> For the wrath of God is revealed from heaven against all ungodliness and unrighteousness of men, who suppress the truth in unrighteousness, because that which is known about God is evident within them; for God made it evident to them. For since the creation of the world His invisible attributes, His eternal power and divine nature, have been clearly seen, being understood through what has been made, so that they are without excuse.

The fact that God exists, and even a few things about His power and nature, is clearly understood by observing the natural world, that which He created. If God's method of creation is indistinguishable from that of a naturalist or a pantheist, where is this so-called evidence?

Princeton theologian, Diogenes Allen, says that "even though nature does not establish God's existence, nature points to the possibility of God. That is, it raises questions which science cannot answer and which philosophy has been unable to answer" (*Christian Belief in a Postmodern World*, p.180). But Romans declares that his invisible nature, eternal power, and deity are **clearly seen through what has been made!** This is

more than raising questions! If God has created through naturalistic evolution then men and women have quite a few excuses. If natural processes are all that is needed, who needs God?

One final note. It has been interesting to me that, as I have observed theistic evolutionists throughout my academic career, I have found that evolutionists have little tolerance for theistic evolutionists because if you accept evolution, then why do you need God? Perhaps even more importantly, they are puzzled about why one would continue to believe in the God of the Bible if you have concluded that He used inefficient, chancey, contingent, and messy natural selection as His method. Even they see the incompatibility of the two.

In summary, Genesis and creation are central to Scripture and Jesus appears to have believed in an historical and interactive creation. Evolution is contrary to the nature and character of God. And, if natural processes are all that is needed for creation, then men are indeed full of excuses to the existence of God, contrary to Romans 1.

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The Worldview of Jurassic Park – A Biblical Christian Assessment

Dr. Bohlin examines the message of Jurassic Park, bringing out some of the underlying messages on science, evolution, new age thinking, and cloning. The movie may be entertaining, but a Christian scientist points out some of the misconceptions

people are taking away from the movie. Remember, this is just a piece of fiction—not a scientific treatise.

The Intent Behind *Jurassic Park*

Driving home after seeing the movie *Jurassic Park* in the first week of its release, I kept seeing tyrannosaurs and velociraptors coming out from behind buildings, through intersections, and down the street, headed straight at me. I would imagine: What would I do? Where would I turn? I certainly wouldn't shine any lights out of my car or scream. Dead give-aways to a hungry, angry dinosaur. Then I would force myself to realize that it was just a movie. It was not reality. My relief would take hold only briefly until the next intersection or big building.

In case you can't tell, I scare easily at movies. *Jurassic Park* terrified me. It all looked so real. Steven Spielberg turned out the biggest money-making film in history. Much of the reason for that was the realistic portrayal of the dinosaurs. But there was more to *Jurassic Park* than great special effects. It was based on the riveting novel by Michael Crichton and while many left the movie dazzled by the dinosaurs, others were leaving with questions and new views of science and nature.

The movie *Jurassic Park* was terrific entertainment, but it was entertainment with a purpose. The purpose was many-fold and the message was interspersed throughout the movie, and more so throughout the book. My purpose in this essay is to give you some insight into the battle that was waged for your mind throughout the course of this movie.

Jurassic Park was intended to warn the general public concerning the inherent dangers of biotechnology first of all, but also science in general. Consider this comment from the author Michael Crichton:

Biotechnology and genetic engineering are very powerful. The film suggests that [science's] control of nature is elusive. And just as war is too important to leave to the generals, science is too important to leave to scientists. Everyone needs to be attentive.{1}

Overall, I would agree with Crichton. All too often, scientists purposefully refrain from asking ethical questions concerning their work in the interest of the pursuit of science.

But now consider director Steven Spielberg, quoted in the pages of the *Wall Street Journal:* "There's a big moral question in this story. DNA cloning may be viable, but is it acceptable?"{2} And again in the *New York Times*, Spielberg said, "Science is intrusive. I wouldn't ban molecular biology altogether, because it's useful in finding cures for AIDS, cancer and other diseases. But it's also dangerous and that's the theme of *Jurassic Park*."{3} So Spielberg openly states that the real theme of *Jurassic Park* is that science is intrusive.

In case you are skeptical of a movie's ability to communicate this message to young people today, listen to this comment from an eleven-year-old after seeing the movie. She said, "Jurassic Park's message is important! We shouldn't fool around with nature."{4} The media, movies and music in particular, are powerful voices to our young people today. We cannot underestimate the power of the media, especially in the form of a blockbuster like *Jurassic Park*, to change the way we perceive the world around us.

Many issues of today were addressed in the movie. Biotechnology, science, evolution, feminism, and new age philosophy all found a spokesman in *Jurassic Park*.

The Dangers of Science, Biotechnology, and Computers

The movie *Jurassic Park* directly attacked the scientific establishment. Throughout the movie, Ian Malcolm voiced the concerns about the direction and nature of science. You may remember the scene around the lunch table just after the group has watched the three velociraptors devour an entire cow in only a few minutes. Ian Malcolm brashly takes center stage with comments like this: "The scientific power….didn't require any discipline to attain it….So you don't take any responsibility for it."{5} The key word here is responsibility. Malcolm intimates that Jurassic Park scientists have behaved irrationally and irresponsibly.

Later in the same scene, Malcolm adds, "Genetic power is the most awesome force the planet's ever seen, but, you wield it like a kid that's found his dad's gun." Genetic engineering rises above nuclear and chemical or computer technology because of its ability to restructure the very molecular heart of living creatures. Even to create new organisms. Use of such power requires wisdom and patience. Malcolm punctuates his criticism in the same scene when he says, "Your scientists were so preoccupied with whether or not they could, they didn't stop to think if they should."

Malcolm's criticisms should hit a raw nerve in the scientific community. As Christians we ask similar questions and raise similar concerns when scientists want to harvest fetal tissue for research purposes or experiment with human embryos. If Malcolm had limited his remarks to *Jurassic Park* only, I would have no complaint. But Malcolm extends the problem to science as a whole when he comments that scientific discovery is the rape of the natural world. Many youngsters will form the opinion that all scientists are to be distrusted. A meaningful point has been lost because it was wielded with the surgical precision of a baseball bat.

Surprisingly, computers take a more subtle slap in the face—surprising because computers were essential in creating many of the dinosaur action scenes that simply could not be done with robotic models. You may remember early in the movie, the paleontological camp of Drs. Grant and Satler where Grant openly shows his distrust of computers. The scene appears a little comical as the field- tested veteran expresses his hate for computers and senses that computers will take the fun out of his quaint profession.

Not so comical is the portrayal of Dennis Nedry, the computer genius behind *Jurassic Park*. You get left with the impression that computers are not for normal people and the only ones who profit by them or understand them are people who are not to be trusted. Nedry was clearly presented as a dangerous person because of his combination of computer wizardry and his resentment of those who don't understand him or computers. Yet at the end of the movie, a young girl's computer hacking ability saves the day by bringing the system back on line.

The point to be made is that technology is not the villain. Fire is used for both good and evil purposes, but no one is calling for fire to be banned. It is the worldview of the culture that determines how computers, biotechnology, or any other technology is to be used. The problem with *Jurassic Park* was the arrogance of human will and lack of humility before God, not technology.

The Avalanche of Evolutionary Assumptions

There were many obvious naturalistic or evolutionary assumptions built into the story which, while not totally unexpected, were too frequently exaggerated and overplayed.

For instance, by the end of the book and the film you felt bludgeoned by the connection between birds and dinosaurs. Some of these connections made some sense. An example would be the similarities between the eating behavior of birds of prey and

the tyrannosaur. It is likely that both held their prey down with their claws or talons and tore pieces of flesh off with their jaws or beaks. A non-evolutionary interpretation is simply that similarity in structure indicates a similarity in function. An ancestral relationship is not necessary.

But many of the links had no basis in reality and were badly reasoned speculations. The owl-like hoots of the poison-spitting dilophosaur jumped out as an example of pure fantasy. There is no way to guess or estimate the vocalization behavior from a fossilized skeleton.

Another example came in the scene when Dr. Alan Grant and the two kids, Tim and Lex, meet a herd of gallimimus, a dinosaur similar in appearance to an oversized ostrich. Grant remarks that the herd turns in unison like a flock of birds avoiding a predator. Well, sure, flocks of birds do behave this way, but so do herds of grazing mammals and schools of fish. So observing this behavior in dinosaurs no more links them to birds than the webbed feet and flattened bill of the Australian platypus links it to ducks! Even in an evolutionary scheme, most of the behaviors unique to birds would have evolved after the time of the dinosaurs.

A contradiction to the hypothesis that birds evolved from dinosaurs is the portrayal of the velociraptors hunting in packs. Mammals behave this way, as do some fishes such as the sharks, but I am not aware of any birds or reptiles that do. The concealment of this contradiction exposes the sensational intent of the story. It is used primarily to enhance the story, but many will assume that it is a realistic evolutionary connection.

Finally, a complex and fascinating piece of dialogue in the movie mixed together an attack on creationism, an exaltation of humanism and atheism, and a touch of feminist male bashing. I suspect that it was included in order to add a little humor and to keep aspects of political correctness in our collective

consciousness. Shortly after the tour of the park begins and before they have seen any dinosaurs, Ian Malcolm reflects on the irony of what *Jurassic Park* has accomplished. He muses, "God creates dinosaurs. God destroys dinosaurs. God creates man. Man destroys God. Man creates dinosaurs." To which Ellie Satler replies, "Dinosaurs eat man. Woman inherits the earth!" Malcolm clearly mocks God by indicating that not only does man declare God irrelevant, but also proceeds to duplicate God's creative capability by creating dinosaurs all over again. We are as smart and as powerful as we once thought God to be. God is no longer needed.

While the movie was not openly hostile to religious views, Crichton clearly intended to marginalize theistic views of origins with humor, sarcasm, and an overload of evolutionary interpretations.

Jurassic Park and the New Age

Ian Malcolm, in the scene in the biology lab as the group inspects a newly hatching velociraptor, pontificates that "evolution" has taught us that life will not be limited or extinguished. "If there is one thing the history of evolution has taught us, it's that life will not be contained. Life breaks free. It expands to new territories, it crashes through barriers, painfully, maybe even dangerously, but, uh, well, there it is!….I'm simply saying that, uh, life finds a way."

Evolution is given an intelligence all its own! Life finds a way. There is an almost personal quality given to living things, particularly to the process of evolution. Most evolutionary scientists would not put it this way. To them evolution proceeds blindly, without purpose, without direction. This intelligence or purposefulness in nature actually reflects a pantheistic or new age perspective on the biological world.

The pantheist believes that all is one and therefore all is

god. God is impersonal rather than personal and god's intelligence permeates all of nature. Therefore the universe is intelligent and purposeful. Consequently a reverence for nature develops instead of reverence for God. In the lunch room scene Malcolm says, "The lack of humility before nature being displayed here, staggers me." Malcolm speaks of Nature with a capital "N." While we should respect and cherish all of nature as being God's creation, humility seems inappropriate. Later in the same scene, Malcom again ascribes a personal quality to nature when he says, "What's so great about discovery? It's a violent penetrative act that scars what it explores. What you call discovery, I call the rape of the natural world." Apparently, any scientific discovery intrudes upon the private domain of nature. Not only is this new age in its tone, but it also criticizes Western culture's attempts to understand the natural world through science.

There were other unusual new age perspectives displayed by other characters. Paleobotanist Ellie Satler displayed an uncharacteristically unscientific and feminine, or was it New Age, perspective when she chastened John Hammond for thinking that there was a rational solution to the breakdowns in the park. You may remember the scene in the dining hall, where philanthropist John Hammond and Dr. Satler are eating ice cream while tyrannosaurs and velociraptors are loose in the park with Dr. Grant, Ian Malcolm, and Hammond's grandchildren. At one point, Satler says, "You can't think your way out of this one, John. You have to feel it." Somehow, the solution to the problem is to be found in gaining perspective through your emotions, perhaps getting in touch with the "force" that permeates everything around us as in *Star Wars*.

Finally, in this same scene, John Hammond, provides a rather humanistic perspective on scientific discovery. He is responding to Ellie Satler's criticisms that a purely safe and enjoyable *Jurassic Park*, is not possible. Believing that man can accomplish anything he sets his mind to, Hammond blurts

out, “Creation is a sheer act of will!” If men and women were gods in the pantheistic sense, perhaps this would be true of humans. But if you think about it, this statement is truer than first appears, for the true Creator of the universe simply spoke and it came into being. The beginning of each day’s activity in Genesis 1 begins with the phrase, “And God said.”

Creation is an act of will, but it is the Divine Will of the Supreme Sovereign of the universe. And we know this because the Bible tells us so!

They Clone Dinosaurs Don’t They?

The movie *Jurassic Park* raised the possibility of cloning dinosaurs. Prior to the release of the movie, magazines and newspapers were filled with speculations concerning the real possibility of cloning dinosaurs. The specter of cloning dinosaurs was left too much in the realm of the eminently possible. Much of this confidence stemmed from statements from Michael Crichton, the author of the book, and producer Steven Spielberg.

Scientists are very reluctant to use the word “never.” But this issue is as safe as they come. Dinosaurs will never be cloned. The positive votes come mainly from Crichton, Spielberg, and the public. Reflecting back on his early research for the book, Michael Crichton said, “I began to think it really could happen.”{6} The official *Jurassic Park* Souvenir magazine fueled the speculation when it said, “The story of *Jurassic Park* is not far-fetched. It is based on actual, ongoing genetic and paleontologic research. In the words of Steven Spielberg: This is not science fiction; it’s science eventuality.”{7} No doubt spurred on by such grandiose statements, 58% of 1000 people polled for *USA Today* said they believe that scientists will be able to recreate animals through genetic engineering.{8}

Now contrast this optimism with the more sobering statements from scientists. The *Dallas Morning News* said, “You’re not likely to see Tyrannosaurus Rex in the Dallas Zoo anytime soon. Scientists say that reconstituting any creature from its DNA simply won’t work.”{9} And *Newsweek* summarized the huge obstacles when it said, “Researchers have not found an amber-trapped insect containing dinosaur blood. They have no guarantee that the cells in the blood, and the DNA in the cells, will be preserved intact. They don’t know how to splice the DNA into a meaningful blueprint, or fill the gaps with DNA from living creatures. And they don’t have an embryo cell to use as a vehicle for cloning.”{10} These are major obstacles. Let’s look at them one at a time.

First, insects in amber. DNA has been extracted from insects encased in amber from deposits as old as 120 million years.{11} Amber does preserve biological tissues very well. But only very small fragments of a few individual genes were obtained. The cloning of gene fragments is a far cry from cloning an entire genome. Without the entire intact genome, organized into the proper sequence and divided into chromosomes, it is virtually impossible to reconstruct an organism from gene fragments.

Second, filling in the gaps. The genetic engineers of *Jurassic Park* used frog DNA to shore up the missing stretches of the cloned dinosaur DNA. But this is primarily a plot device to allow for the possibility of amphibian environmentally-induced sex change. An evolutionary scientist would have used reptilian or bird DNA which would be expected to have a higher degree of compatibility. It is also very far-fetched that an integrated set of genes to perform gender switching which does occur in some amphibians, could actually be inserted accidentally and be functional.

Third, a viable dinosaur egg. The idea of placing the dinosaur genetic material into crocodile or ostrich eggs is preposterous. You would need a real dinosaur egg of the same

species as the DNA. Unfortunately, there are no such eggs left. And we can't recreate one without a model to copy. So don't get your hopes up. There will never be a real *Jurassic Park*!

Notes

1. Sharon Begley, "Here come the DNAsaurs," *Newsweek*, 14 June 1993, 61.

2. Patrick Cox, "*Jurassic Park*, A Luddite Monster," The *Wall Street Journal*, 9 July 1993.

3. Steven Spielberg, quoted by Patrick Cox, *WSJ*, 9 July 1993.

4. Cox, *WSJ*, 9 July 1993.

5. From this point on all dialogue is from the movie *Jurassic Park*, Kathleen Kennedy and Gerald R. Molen, Producers, copyright 1993, Universal City Studios, Inc., and Amblin Entertainment.

6. Michael Crichton, quoted in "Crichton's Creation," *The Jurassic Park Official Souvenir Magazine*, (Brooklyn, N.Y.: The Topps Company, Inc., 1993), 4.

7. "Welcome to Jurassic Park," *The Jurassic Park Official Souvenir Magazine*, (Brooklyn, N.Y.: The Topps Company, Inc., 1993), 2.

8. American Opinion Research poll of 1,000 adults from May 7-24, 1993 cited in *USA Today,* Friday, June 11, 1993, 2A.

9. Graphic inset, "How Real is *Jurassic Park*?," The *Dallas Morning News*, Monday, 14 June 1993, 10D.

10. Begley, "Here Come the DNAsaurs," 60-61.

11. Raul J. Cano, Hendrik N. Poinar, Norman J. Pieniazek, Aftim Acra, and George O. Poinar, Jr. "Amplification and sequencing of DNA from a 120 135-million-year-old weevil,"

Nature 363 (10 June 1993): 536-38.

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The Sanctity of Human Life: Harvesting Human Fetal Parts

The grisly effects of over twenty years of an abortion industry in this country are becoming easier to document all the time. In Pennsylvania, the "anatomy specialist" for The International Institute for the Advancement of Medicine has a task that would cause many of us to become physically ill. He travels to local abortion clinics seeking abortion remains. He searches for fetal parts and tissues that may be of use to medical doctors and researchers. The Institute is one of a half-dozen fetal tissue providers in the country. They will charge handling fees of $50 to $150. These companies distribute over 15,000 specimens to doctors and researchers annually. Some large medical centers at universities regularly supply fetal parts to their own doctors and researchers (*The Human Body Shop*, by Andrew Kimbrell, HarperCollins, 1993, pp. 45-66).

The growth and future prospects of the fetal tissue market are actually quite good. Despite controversy over their effectiveness, the use of fetal organs for transplants is expected to grow. Prime targets for recipients are the 1 million Parkinson's disease victims, 3 million Alzheimer's patients, 6 million diabetics, and 25,000 with Huntington's disease.

The growth of this industry is assured for three reasons. First, fetal tissue comes from sources the Supreme Court in

Roe vs. Wade does not consider persons. This gives developing babies virtually no legal status, and there is no recognized need for regulation of “non-descript tissue.” Second, fetal tissue exhibits tremendous developmental potential. The use of fetal tissue in transplants is desirable since these tissues are expected to grow and hopefully replace adult tissue that has ceased to function or functions improperly. In the case of Parkinson’s disease, fetal brain tissue is transplanted into the brains of Parkinson’s victims in the hope that the fetal tissue will perform normally and lessen or eliminate the effects of the disease. Third, fetal tissue is available in an abundant and continuous supply. With over 1.5 million elective abortions performed in this country every year, the supply of fetal tissue is bountiful.

These prospects are complicated further by the fact that the best tissue for research and transplants is tissue obtained from fetuses that were still alive when the tissue was obtained. There is no way to offer protection under current law. France, the United Kingdom, Australia, Canada, and Sweden all have guidelines but no laws. The U.S. had the Reagan moratorium on fetal tissue research involving federal funds. But this moratorium has been misunderstood. All it did was ban the use of federal funds for this research, not ban the research altogether. This ambiguous situation provides new pressures on pregnant women seeking abortion. Some are asked to allow their abortion to be performed by certain procedures to allow for the live acquisition of fetal parts. So not only is she asked to end the life that thrives within her, but she is sometimes asked to sign a permission waiver to allow for a particular procedure. The lack of legal status will lead to a commercial industry. President Clinton virtually assured this prospect when he lifted the ban on using government monies for research using fetal tissue from elective abortions.

This is no time to lose heart or grow faint in the pro-life movement. The fetal tissue industry will exert new monetary

pressures to continue abortion on demand. This raises an additional rationalization that abortion is for the common good. “Just look what can be done for those suffering from these diseases” they will say. We must stiffen our resolve and understand what is happening in our culture.

The Sanctity of Human Life and the Bible

As the pro-life movement encounters increasing pressures from inside and outside, it becomes more important than ever to have our thinking grounded in Scripture. We must not only know what we believe, but also why. Some of these passages are ones you are familiar with to some degree, but some of them may be new. In either event, they are important to have for quick reference.

Psalm 139:13-16 says, “For Thou didst form my inward parts; Thou didst weave me in my mother’s womb. I will give thanks to Thee, for I am fearfully and wonderfully made; wonderful are Thy works, and my soul knows it very well…. Thine eyes have seen my unformed substance; and in Thy book they were all written, the days that were ordained for me, when as yet there was not one of them.” David clearly implies that God is intimately involved in the process of embryological development inside the womb. David also indicates that the days of every developing human have been numbered from before birth.

Psalm 51:5 says, “Behold I was brought forth in iniquity, and in sin my mother conceived me.” David is not suggesting that he was born as the result of a sinful relationship. What he is saying is that from the time he left his mother’s womb, even from the moment he was conceived, he was a sinner. David, therefore, was not some amorphous blob of tissue at conception, but a spiritual being with a sin nature. Some may object that I am using a modern day definition of conception and applying it to a 3,500-year-old text. However, conception was recognized as the beginning of life. They understood that

the seed of the man needed to be combined with the seed of the woman and out of that union, a new life was brought forth. While our technical knowledge may be more precise, the idea is still the same.

Several individuals in Scripture tell us that they were called to their respective ministries before birth or while still in the womb. The Lord tells Jeremiah in Jeremiah 1:5, “Before I formed you in the womb I knew you, and before you were born I consecrated you; I have appointed you a prophet to the nations.” Isaiah says in Isaiah 49:1, “The LORD called me from the womb; From the body of my mother He named me.” Paul says in Galatians 1:15, “But when He who had set me apart, even from my mother’s womb, and called me through His grace, was pleased to reveal His son in me.” Our days were not only numbered, but our ministries already planned from the time before we entered our mother’s womb. Each and every life is indeed valuable in God’s eyes.

Even more instructive is the miracle of the Incarnation. In Matthew 1: 18-20, we are told that Mary was with child by the Holy Spirit. Jesus entered the world at the point of conception.

We celebrate the incarnation at Christmas, Jesus’ birth, but the actual event took place at conception. This reality is brought home to us when Mary visits her cousin Elizabeth a short time later. John the Baptist, at six months gestation in Elizabeth’s womb leaps for joy inside her as he comes into the presence of the Messiah in Mary’s womb. At that point Jesus was not just a blob of cells or mere tissue. He was the Messiah, the Son of the Most Holy God. It is also important to note that John the Baptist was filled with the Holy Spirit and leaped for joy in the womb. Only beings made in God’s image can be filled with the Holy Spirit and that is what John was.

The Other Side of Life

Euthanasia has taken root in the culture and in our nation. Doctor-assisted suicide propositions failed in Washington State and California before passing in Oregon this last election. Dr. C. Everett Koop fears that for every Baby Doe that is allowed to die in a hospital due to physical or mental handicaps, there will be 10,000 Grandma Does. There is no question that we are faced with many difficult decisions concerning the end of life today because of the immense technological ability to sustain life indefinitely. While we hold that every life is sacred in the eyes of God, does there come a time when the merciful and right thing to do is to end a life?

The Bible actually has something to say to us in this matter. Apart from the commandment against murder there is additional information concerning the sanctity of life in 1 and 2 Samuel. For example, 1 Samuel 31 tells of the death of Saul's sons, including Jonathan, in battle with the Philistines. When Saul witnesses these events and sees that defeat is unavoidable, he asks his armor bearer to kill him because he cannot stand the thought of capture by the Philistines. The armor bearer refuses out of fear, so Saul falls on his own sword to kill himself.

We learn, however, from an Amalekite who brings news about Saul to David in 2 Samuel 1, that like many other events during his reign, Saul did not get his own suicide quite right. We learn that this Amalekite had come upon Saul, whose life still lingered in him, at which point Saul requested that the Amalekite finish the job, which he did. Upon news of the King's death, David and his followers tear their clothes and mourn the death of the King of Israel. David next asks the Amalekite why he did not fear to slay God's anointed leader (Saul). Without waiting for a reply, David has the man struck down. It could be argued that David's drastic response could

be because it was the King. But just as clearly, this man took Saul's life, and capital punishment was administered. God is a God of life and not death.

The New Testament constantly presents death as the enemy. Jesus wept at the tomb of Lazarus not just because of the loss of a friend, but also because of the spoiling effects of death on His creation. Jesus continually healed the sick, even those who were close to death, not just to relieve suffering but because death was the enemy. Jesus' message was clear: we are to seek to preserve life not find ways to terminate it.

But many in our society face difficult decisions concerning life and death. When are extra-ordinary measures justified and when should nature be allowed to take its course? Some would even say that the merciful thing to do is to take active measures to end a life that is wracked with incurable suffering. Christian Medical ethicist, John F. Kilner, presents a threefold imperative for making decisions in this area. Our decisions should be **God- centered**, **Reality-bounded**, and **Love-impelled**. *God-centered* in that we have studied what Scripture has to say about life and death. We have gained an understanding of God's perspective. *Reality- bounded* in that we have educated ourselves concerning the relevant medical technologies and capabilities as well as the status of the patient. *Love-impelled* in that we consider others as more important than ourselves and that we are seeking the comfort and treatment of the one who is ill and not what will be easier for us to handle. All too often today, society offers a caricature of godly love and offers it up as the only criterion to be considered.

Decisions of Life and Death in the Real World

When asked about issues of death and dying, a book I always recommend is by Joni Eareckson Tada, *When Is It Right to Die?*

Joni brings a unique blend of biblical interpretation, personal experience, and knowledge of modern medicine to the issues of suffering, mercy, suicide, and euthanasia. One of the more important points in the book is that there is a real difference between allowing nature to take its course in a person who is clearly dying and taking specific measures to end someone's life. Joni quotes former U.S. Surgeon General and co-author of the book, *Whatever Happened to the Human Race?*, C. Everett Koop:

> *If someone is dying and there is no doubt about that, and you believe as I do that there is a difference between giving a person all the life to which he is entitled as opposed to prolonging the act of dying, then you might come to a time when you say this person can take certain amounts of fluid by mouth and we're not going to continue this intravenous solution because he is on the way out.*

This is what death with dignity is supposed to be all about. There does come a time when a patient is dying and there is nothing to be done to heal or cure him. The next question then is how long and with what measures do you prolong the act of dying. As a person dies, various bodily functions begin to shut down. Some will completely lose the ability to eliminate fluids from the body. In these cases, if intravenous fluids are continued, the body will bloat and become extremely uncomfortable. Medical care becomes torture. Better to remove the intravenous solution, provide limited fluid by mouth, and allow the dying process to continue while making the patient as comfortable as possible.

Withholding fluids in this case is totally different than withholding fluids from a newborn Down's Syndrome child because the parents don't want the child. The latter is murder. What is important here is to realize that every case is different. There is no set of rules that will be able to govern every possible situation. That is why any law

attempting to legalize doctor- assisted suicide is dangerous. It is simply impossible to cover all the bases. The law will be abused.

We have the clear testimony of the Netherlands to back that up. A 1991 article in the *Journal of the American Medical Association*, stated that rules were established governing euthanasia in the Netherlands by the courts in 1973. However, the article stated that only 41% of the doctors obey the rules, 27% admit to having performed involuntary euthanasia (without consent of the patient), and 59% are willing to do so under various circumstances. In 1990, 5,941 deaths were the result of involuntary euthanasia.

But why is euthanasia gaining so much popular support? The reason is fear. People fear the power of modern medicine. They are worried that modern technology is out of control and that they may be left on life-support indefinitely and unnecessarily. People also fear the loneliness and pain of death. Today there is no reason to fear the pain. Surprisingly, the U.S. is a bit behind the rest of Western medicine in the treatment of pain in that there are many options available to treat pain and nearly eliminate it entirely for a dying patient. The loneliness is best dealt with in a hospice. A hospice is designed to take care of the emotional, mental, spiritual needs as well as the physical aspects of the terminally ill. In a hospital, a dying patient is often seen as a failure. A hospice can effectively provide care that is God- centered, reality-bounded, and love-impelled.

A Call to Action and A Warning

In this discussion I have tried to lay out some of the clear biblical and medical issues that face us today in the pro-life movement. Often we can become confused as to what we can do that is effective in turning the culture around. Certainly using the ballot box effectively is important. Making use of

our representative form of government by writing letters and calling the appropriate legislators to let them know our position on a particular issue is another. But I would like to conclude with a specific encouragement and a warning.

My encouragement is to become involved in whatever way possible with a crisis pregnancy center in your area. If there isn't one, get a group together to find out how to start one. The Christian Action Council out of Washington, D.C., has set up hundreds of them around the country. Assisting women in a crisis pregnancy has a clear biblical parallel with how God treated Hagar when she left Abraham's household.

You will remember that when Sarah became frustrated with her inability to provide Abraham with a son to fulfill God's promise, she brought her servant, Hagar, to Abraham as a substitute. Abraham consented, of course, and soon found himself in trouble. When Hagar conceived there was immediate tension. Hagar was jealous because although she performed the duties of a wife for Abraham, she had gained none of the privileges. Sarah on the other hand was resentful because Hagar was successful where she had failed. Sarah complained to Abraham about Hagar's outward hostility and half- rightly blamed him for Hagar's mistreatment of her. Abraham gave Sarah permission to mistreat Hagar, and Hagar ultimately fled into the desert. This was indeed a crisis pregnancy. Hagar's child in her womb was the result of an adulterous relationship: she had been abused and mistreated, and she was now homeless and destitute.

But God met her in her time of need. He provided for her materially by telling her to return to Abraham and Sarah. He comforted her emotionally by assuring her that her child was important to Him by indicating that it was a son and He already had a name picked out for Him: Ishmael, meaning "God hears." God also promised that her son would be the father of many nations. Hagar chose life for herself and for her son. Today, women will choose the same path if provided with the

truth surrounded by love and compassion.

My warning is to say simply that violence is never justified in our fight to save lives. First, we are commanded to submit and obey governmental authorities (Titus 3:1 and Rom. 13:1). Remember that Moses was banished for 40 years for taking matters into his own hands in Egypt when he killed an Egyptian soldier who was mistreating an Israelite worker (Exod. 2:11). Moses had one solution in mind, but God had another. Israel had every right by today's standards to rise up in armed rebellion. God, however, had another plan. Civil disobedience is certainly allowed when God's laws are violated, but violent protest is nowhere recorded in Scripture (Exod. 1,12; Daniel 3; 1 Kings 18; Acts 4-5; Rev. 13). Daniel disobeyed the law of the land but submitted to the lion's den as did the martyrs of the early church when faced with terribly brutal and unjust persecution. Jesus rebuked Peter's use of the sword at His arrest (Matt. 26:52). Jesus submitted to Pilate's authority. He said, "You would have no power over me if it were not given to you from above" (John 19:10-11).

Whether dealing with abortion, helping women victimized by the allure and power of a legal abortion industry, or comforting people afraid of pain, suffering, and death, our response should be God- centered, rooted in the sanctity of human life; reality-bounded, knowledgeable about the situation, and love-impelled, guided by the desire to extend the love of Christ to all.

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The Natural Limits to Biological Change

Summarizing his book by the same name, Probe's Dr. Ray Bohlin critiques both Neo-Darwinism and punctuated equilibrium and offers an alternative based on intelligent design.

One of the most significant questions in the origins debate concerns the nature of biological change. Can organisms change into an infinite array of creatures? Or are there genetically imposed limits to the amount of change which can take place? There are two major theories of evolutionary change: neo-Darwinism and punctuated equilibrium. As creationists, Lane Lester and I proposed in 1984 that indeed there are limits to change in our book, *The Natural Limits to Biological Change*. Theoretically, it may seem difficult to propose that immense variety may occur within a group of organisms yet this variety is constrained within certain genetically induced limits. It may seem contradictory even. But in the intervening ten years, my confidence in the proposal has only strengthened, and my confidence in any evolutionary mechanism to accomplish any significant adaptational change has waned considerably.

The arguments against neo-Darwinism center around four topics: mutation, natural selection, population genetics, and paleontology. Our major objection to the role of mutations in evolutionary change is the clear lack of data to indicate that mutations really accomplish anything new. While some weird-looking fruit flies have been created in the laboratory, they are still fruit flies. Bacteria are still bacteria. We quoted from Pierre-Paul Grasse', the great French evolutionist. When commenting on the mutations of bacteria he said:

> What is the use of their unceasing mutations if they do not change? In sum, the mutations of bacteria and viruses are merely hereditary fluctuations around a median position; a

swing to the right, a swing to the left, but no final evolutionary effect.

A mechanism for the creation of new genetic material is also sadly inadequate. Sometimes, an extra copy of a gene arises due to a DNA duplication error. Evolutionists suggest that this extra gene can accumulate mutations and eventually code for a new gene with a different function. In reality, however, this fails to explain how an old gene takes on a new function and new regulation pathways by the introduction of genetic mistakes into the gene and the regulatory apparatus.

Natural selection is a conservative process, not a creative one. The famous example of peppered moths teaches us how a species survives in a changing environment by possessing two varieties adapted to different conditions. Antibiotic resistance in bacteria only instructed us in the ingenious mechanisms of different bacteria to share the already existing genes for antibiotic resistance among themselves.

Decades of research in the science of population genetics has not helped the neo-Darwinist position. The data from protein and gene variation shed only a dim light on the major problem of evolution—the appearance of novel adaptations. The major significance of population genetics has been helping to understand how an organism responds to minor environmental fluctuations. And even this can be clouded in fundamental differences in theory.

The data of paleontology have been elaborated at length elsewhere. Gradual, neo-Darwinian evolution is not observable in the fossil record. The rarity of transitional forms has been called the trade secret of paleontology. Mutations, natural selection, genetics, and paleontology have all proved to be dead ends for Darwinism.

Obstacles to the Theory of Punctuated Equilibrium

The coelacanth is a fish that has existed for hundreds of millions of years according to evolutionists and was thought to resemble the ancestors of modern amphibians. However, research into their anatomy, physiology, and life history since their rediscovery off Madagascar in 1938 have revealed no clues to their possible preadaptation to a terrestrial existence. The coelacanth is an example of stasis—the long-term stability of new species—the first cornerstone of evolution. A second is the sudden appearance of new species. One doesn't have to look very far for statements by paleontologists pointing to the fact that transitional forms are traditionally absent.

Introduced in 1972 by Niles Eldredge and Stephen Gould as a description of the pattern in the fossil record, punctuated equilibrium centers on the claims of stasis and sudden appearance. The major vehicle of evolutionary change becomes speciation, a process which gives rise to new species. Eldredge and Gould suggested that where there is lots of speciation, there should be lots of morphological differences. Where there is little speciation, there will be few morphological differences.

Morphological Change Becomes Associated with Speciation

If morphological change is supposed to be associated with speciation, then groups of organism that contain large numbers of species should also display large morphological differences within the group. But there are numerous examples of specific groups of related organisms that contain large numbers of species, like the minnows (*Notropis*), which show very little morphological divergence. This is exactly the opposite of their prediction. Sunfishes (*Lepomis*), however, a group with

relatively few species, show just as much morphological divergence as the minnows. This is one more contradiction of punctuated equilibrium because here there is little speciation but a lot of differences.

Another tricky aspect of the claims of punctuated equilibrium is that a new species of fossil can only be recognized because of observable differences, usually in the skeletal structure. Biological species, however, are designated by many criteria (chromosome structure, etc.,) that cannot be detected in a fossil. Therefore, trying to extend a paleontological description of species and speciation will be very difficult.

What we see is that beyond punctuated equilibrium's ability to describe the fossil record, it is of little use to evolutionary biologists because they cannot imagine a way to make it work with real organisms. Gould and Eldredge admitted as much in their review of punctuated equilibrium's progress in the journal, *Nature*, in 1993 when they lamented that:

> But continuing unhappiness, justified this time, focuses upon claims that speciation causes significant morphological change, for no validation of such a position has emerged.

In addition, punctuationalists offer no new mechanisms for arriving at new genetic information. No new theory of evolutionary change is complete without some workable mechanism for generating new genetic information. There appears to be a general lack of appreciation as to what a mutation is and what its effects on the organism may be. Discussions of regulatory and developmental mutations are carried out with no regard as to the overwhelmingly destructive effect such mutations produce compared to mutations in structural genes. Developmental mutations can cripple an organism or even lead to death. Thus, punctuated equilibrium raises more questions than it answers.

Another Alternative

As I have tried to point out, the two major competing models of evolutionary change are far from being considered accepted facts of nature. Both suffer from serious problems from which, some say, they may never be able to recover. However, if one sits back and views the evidence as a whole, a totally different perspective arises as a possibility.

First, virtually all taxonomic levels, even species appear abruptly in the fossil record. This, it will be remembered, is one of the sharper criticisms of neo-Darwinism, and one of the two cornerstones of punctuated equilibrium. It is relevant not only that the various levels of taxa appear abruptly but also that alongside the higher taxonomic levels there are unique adaptations. This is the key. Unique and highly specialized adaptations usually, if not always, appear fully formed in the fossil record. The origin of the different types of invertebrate animals such as the sponges, mollusks, echinoderms like the starfish, arthropods like crustaceans, and others all appear suddenly, without ancestors, in the Cambrian period.

Second, there is the steady maintenance of the basic body plan of the organism through time. One need only think of the living fossils from paleontology and of bacteria and the Drosophila fruit flies from genetics. The basic body plan does not change whether analyzed through time in the fossil record or through mutations in the laboratory. This conclusion is reinforced by animal and plant breeders through artificial selection. There is much variation, but it can be manipulated only to a limit.

Third, we found that in the few cases where organisms have adapted to new environments, this is predominantly brought about through very ordinary processes utilizing genetic variation that was probably always present in the species. Mutations, when they do play a role, produce defective

organisms that survive and thrive only in unusual and unique environments. At best the chances of mutants out-competing normal or wild-type organisms are minute.

Fourth, we see the apparent inability of mutations to truly contribute to the origin of new structures. The theory of gene duplication in its present form is unsuitable to account for the origin of new genetic information that is a must for any theory of evolutionary mechanism.

Fifth, we observed the amazing complexity and integration of the genetic machinery in every living cell. What we do know of the genetic machinery is impressive; what we have yet to learn staggers the imagination. One's curiosity is aroused as to how mutation, selection, and speciation could ever hope to improve or change the machinery in any substantial way. The cellular machinery poses an even bigger problem. The molecular workings of cilia, electron transport, protein synthesis, cellular targeting, and so many others, are simply astounding.

The sixth and final element involves the big picture. Ecosystems themselves are a marvelous balance of complexity and integration. One can devise schemes of energy flow or biomass flow through an ecosystem as complicated as any biochemical pathway or genetic regulatory scheme. At the center of all this is the wondrous fit of an organism to its own peculiar environment. In the time before Darwin this wondrous fit was the chief evidence of a Supreme Designer.

So, while it is clear that organisms change, there may be a limit to biological change.

The Natural Limits to Biological Change

Has Darwin's theory of natural selection really shown intelligent design in nature to be unreasonable? In view of the failure of evolutionary mechanisms to be convincing, might biological change be a limited affair? Could the limits of

biological change arise from the very nature of the genetic code itself, the unique set of structural and regulatory genes present in various groups of organisms and the tight organization and coadapted nature of the entire genome? I believe there are limits to biological change and that these limits are set by the structure and function of the genetic machinery.

Intelligent design is not a new concept. Of course the concept itself, goes back into the previous centuries. Intelligent design, however, is taking on a more sophisticated form. As knowledge of informational codes and information theory grows, the possibility of making predictions of the intricacy of the DNA informational code grow more realistic. If DNA required intelligent pre-programming, the signs should be unmistakable.

The mark of intelligence is not exactly hard to discern. We speak of the genetic code, DNA transcribed into RNA, RNA translated into protein. These are language terms. They are used not just because they are convenient, but because they accurately describe what is going on in the cell. There is a transfer of information. I believe that an application of information theory to the field of genetics will yield a comprehensible theory of limited biological change.

This is wholly reasonable because information theory concerns itself statistically with the essential characteristics of information and how that information is accurately transmitted or communicated. DNA is an informational code, so the connection is readily apparent. The overwhelming conclusion is that information does not and cannot arise spontaneously by mechanistic processes. Intelligence appears to be a necessity in the origin of any informational code, including the genetic code, no matter how much time is given.

More directly though, our concern was with what happens after the code is in place. Could intelligence be required for the first cell but not afterward? To answer that we must look at

the informational content of DNA a little more closely. Similar to what happens in language, there are two fundamental principles involved in the expression of genetic information. First, there is a finite set of words that are essentials of content. In organisms, this is comparable to structural genes. Second, the rules of grammar provide for the richness of expression using the finite set of words. In organisms, these rules or programs consist of the regulatory and developmental mechanisms. In human languages, given a finite set of words and a set of rules, the variety of expression goes on and on. It is conceivable, therefore, that different groups of organisms, maybe bats and whales for example, are characterized by different regulatory mechanisms, i.e., different developmental programs.

There is growing interest in a biological theory of intelligent design around the world. While many still vigorously oppose all such ideas, there is a much greater openness than ever before. Philosophers, mathematicians, chemists, engineers, and biologists are willing to suggest, even demand that a more rigorous study of intelligent design in relation to biological organisms be pursued. A renaissance may be around the corner.

Confirming New Data

It was known ten years ago that much of the information for the early stages of development were contained in the cytoplasm or the cell membrane. This has since been rigorously confirmed. There is information, therefore, that is possibly not contained in the nucleus. So our emphasis on the genetic material was a little too strong. There is at least another source of information to consider. This seems to imply that in order to change the body plan changes are required to be coordinated in perhaps two unrelated sources of information in the embryo. This would make a change in the developmental pathway even more difficult to achieve.

Michael Denton's book, *Evolution: A Theory in Crisis*, revealed that development through the earliest embryonic stages is vastly different in amphibians, reptiles, and mammals. Supposedly similar early structures arise from non-similar structures and pathways in the embryo. This bears witness to our contention that unique developmental pathways would separate the basic types, even when the structures are thought to be homologous.

The complexity of living things continue to astound the imagination. Michael Behe has introduced the term **irreducible complexity**. Irreducibly complex systems are systems which must have all molecular components present in order to be functional. He used the molecular machinery of cilia as an example. Cilia contain numerous molecular components such as the proteins nexin, dynein, and microtubules that all need to be present if a cilia is to perform at all. Cilia cannot arise step by step.

But perhaps the most gratifying confirmation of our ideas came about recently in the publication of a book edited by J. P. Moreland, *The Creation Hypothesis*. The chapter on the origin of human language contained this passage on the complexities of the genetic language.

In order for any organism to be what it is, its genetic program, (DNA) must specify what sort of organism it will be and, within surprisingly narrow limits, what specific characteristics it will assume. Such limits, innately determined, apply as much to a human being or to a Rhesus monkey as to a special variety of fruit fly or yeast or bacterium (p. 252).

Later after discussing the cascade of information from DNA to protein they conclude:

> The whole cascading network of relationships must be specified within rather narrowly defined limits in order for

> any organism whatever to be a viable possibility. Moreover, the problem of biogenesis and the origin of human language capacity are linked at their basis by more than just a remarkable analogy. It turns out that the human genome must include the essential characteristics of the entire conceptual system that we find manifested in the great variety of languages and their uses, but within rather narrow limits, by human beings throughout the world (p. 254).

The use of such phrases as “narrowly defined limits” and “great variety” applying to both human languages and the information content of DNA is promising. If languages require intelligent pre-programming, then so does the genetic code.

It is difficult for me to imagine that that honest men and women could study the immense complexities of even the “simplest” creatures and not marvel, or better yet worship, at the feet of their Creator.

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Human Fossils

The study of human evolution suffers from too few fossils, tunnel worldview vision, powerful personalities, and too much media misinformation. Probe’s Dr. Ray Bohlin tries to sort out the data from a creationist perspective.

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.

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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.

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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.

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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.

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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.

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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.

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