Evolution’s Big Bang

The Cambrian explosion of life has long befuddled evolutionists. New data have only deepened the mystery and caused a critical rethinking of cherished evolutionary concepts.

 *This article is also available in Spanish.*

Another Big Bang?

The impish Calvin, from the now defunct daily comic strip “Calvin and Hobbes,” once offered to rename the Big Bang Hypothesis, “The Horrendous Space Kablooie!” Most of us have heard at some point of cosmology’s preferred explanation for the origin of the universe, the Big Bang Hypothesis. The Big Bang of cosmology describes the origin of the universe as occurring in a powerful explosion that eventually results in the universe as we see it today. But a recent issue of *Time* magazine (4 December 1995) heralded a new Big Bang, a Big Bang of biological evolution previously known as the Cambrian Explosion of Life. And just as many draw theistic conclusions from cosmology’s Big Bang, so it is possible to draw theistic conclusions from what is now being called Evolution’s Big Bang.

But first, just what is evolution’s Big Bang? The cover of this issue of *Time* declared: “New discoveries show that life as we know it began in an amazing biological frenzy that changed the planet almost overnight.” A subheading just in front of the inside article proclaimed, “For billions of years, simple creatures like plankton, bacteria, and algae ruled the earth. Then, suddenly, life got very complicated.”

The standard evolutionary story describes an earth bombarded by meteorites from its origin 4.5 billion years ago until almost 3.8 billion years ago. Within only 100 million years

the first life evolved following the cessation of this celestial onslaught. This, in and of itself, is a huge evolutionary hurdle without explanation. For the next 3 billion years, little else but single- celled life forms ruled the planet. Then suddenly, in the Cambrian geological period, the earth is populated with a huge diversity of complex multicellular life forms. This has always looked suspiciously like some form of creation event, and paleontologists frequently seemed rather embarrassed by the reality of the Cambrian Explosion.

So, where is the documentation for the long history of the evolution of these creatures? The usual answer is that the necessary fossil layers prior to the Cambrian period have not been discovered yet. The fossils are just missing! Hmmm. . . . how convenient! This, after all, was Darwin's excuse and many evolutionists after him followed suit. Well, recent discoveries from Canada, Greenland, China, Siberia, and Namibia document quite clearly that this period of biological creativity occurred in a geological instant virtually all around the globe. So, the usual excuse no longer holds water. While evolutionists are not exactly joining a creationist wave of conversion, they are being forced to ask tough questions concerning the nature of evolutionary change. Darwin did not envision major evolutionary change happening this fast. Darwinism has always been characterized by slow gradual change that is imperceptible in our time frame. Major evolutionary change was only visible as we looked to the fossils to reveal the number and type of intermediates between species and major groups. But the Cambrian explosion is anything but gradual, and identifiable intermediates are totally absent. Where are the ancestors? What conditions could have prompted this frenzy of creativity? Is there some form of unknowable evolutionary mechanism at work? I think you will find the evolutionary community's answers to be quite revealing.

How Fast is Fast?

Anomalocaris! Ottoia! Wiwaxia! Hallucigenia! Opabinia! If these names are unfamiliar to you, well, they should be. For they are only becoming familiar to paleontologists over the last twenty years. Paleontologists are those scientists who study the fossils embedded in ancient layers of rock. And this strange list represents a group of animals from the Cambrian period that is only now being appreciated—animals which supposedly lived over 500 million years ago. These animals not only possess strange sounding names, but are even stranger looking! So strange and different are they that most are contained in phyla of which they are the only example and which no longer exists.

Whoa! . . . you say! And just what is a phyla? Well, if you think way back to high school biology, *phyla* is actually the plural form of *phylum,* a Latin term designating a large category of biological classification. The largest category of classification is the Kingdom. We all know about the Animal and Plant Kingdoms. Well, Phylum is the next category below Kingdom. The Animal Kingdom consists of such well known phyla as the molluscs which contains clams, oysters, and snails. Another commonly known phylum is the annelids to which belong the earthworms. The largest of all phyla is the arthropods. Arthropods range from insects to millipedes to spiders to shrimp. We are placed in the phylum Chordata along with all other vertebrates, the fish, amphibians, reptiles, and other mammals. Representatives from different phyla are very different creatures. There is not much in common between a human, an earthworm, a clam, and a mosquito. They are all from different phyla—so different that evolutionists have assumed that it must have taken tens of millions of years for these phyla to evolve from one common ancestor.

Yet, here is the real puzzle of the Cambrian Explosion for the theory of evolution. All the known phyla, except one, along

with the oddities with which I began this discussion, first appear in the Cambrian period. There are no ancestors. There are no intermediates. Fossil experts used to think that the Cambrian lasted 75 million years. But even that seemed to be a pretty short time for all this evolutionary change. Eventually the Cambrian was shortened to only 30 million years. And if that wasn't bad enough, the time frame of the real work of bringing all these different creatures into existence was limited to the first five to ten million years of the Cambrian. This is extraordinarily fast! Harvard's Stephen Jay Gould says, "Fast is now a lot faster than we thought, and that is extraordinarily interesting." What an understatement! "Extraordinarily impossible" might be a better phrase!

In the *Time* magazine article (p. 70), paleontologist Samuel Bowring says, "We now know how fast fast is. And what I like to ask my biologist friends is, How fast can evolution get before you start feeling uncomfortable?" I would love to ask Bowring just what he meant by that statement. It's almost as if he is recognizing that current evolutionary mechanisms can't possibly act that fast. The potential answers to that dilemma are only creating more questions, questions that evolutionists may never be able to answer.

How Could the Cambrian Explosion Occur?

Charles Darwin proposed an evolutionary process that was slow and gradual. This formulation has remained the mainstay of evolutionary explanations for the over 100 years since Darwin until very recently. One of the many reasons for a rethinking of this slow, gradual, snail-like pace has been the intricate complexity of living things. In the years before Darwin, the marvelous fit of an organism to its environment was considered the chief evidence of a Supreme Designer. But Darwin supposedly showed another and better way, natural selection. But if organisms were so finely-tuned to their environment, so wonderfully adapted to their particular niche, then if they

were to change at all over time, then that change would have to be very gradual so as not to upset too quickly that delicate balance between the organism and its environment.

This notion of the gradualness of the evolutionary process was deeply reinforced with the discovery of DNA and the genetic code. DNA operates as an informational code for the development of an organism from a single cell to an adult and also regulates all the chemical processes that go on in cells. Mutations, or mistakes in the code had to have very minor effects. Disruption of the blueprint would be very sensitive. The small changes brought about by mutations would have to be cumulative over very long periods of time to bring about significant evolutionary changes.

This necessity of gradualism explains the difficulty evolutionists have concerning the Cambrian explosion or Evolution's Big Bang, as *Time* magazine called it. How could animals as diverse as arthropods, molluscs, jellyfish, and even primitive vertebrates all appear within a time span of only 5-10 million years with no ancestors and no intermediates? Evolution just doesn't work this way. Fossil experts and biologists are only beginning to wrestle with this thorny dilemma. Some think that genes which control the process of development from a fertilized egg to an adult, the so- called *Hox* genes, may have reached a critical mass which led to an explosion of complexity. Some of the simplest multi-celled organisms like the jellyfish only have three *Hox* genes, while insects have eight, and some not-quite-vertebrates have ten. Critical mass may be a real phenomena in physics, but biological processes rarely if ever work that way. Besides, that doesn't solve the important riddle of where the first *Hox* gene came from in the first place. Genetic information does not just spontaneously arise from random DNA sequences.

Other scientists think that a wholesale reorganization of all the genes must have also changed along with the duplication of *Hox* genes to bring about this stupendous amount of change. But

that only complicates the picture by requiring additional, simultaneous genetic mutations that have to occur virtually all at once. This would have an enormous negative effect on an organism that was already adapted to its environment. How could it survive? It seems that the equivalent of a miracle would be required. But such things aren't allowed in evolution. To quote *Time* magazine again,

> *Of course, understanding what made the Cambrian explosion possible doesn't address the larger question of what made it happen so fast. Here scientists delicately slide across data-thin ice, suggesting scenarios that are based on intuition rather than solid evidence.*

Why Hasn't Such Rapid Change Ever Happened Again?

Before addressing this question, let's review our discussion thus far. Evolution's Big Bang, the Cambrian explosion of life that supposedly occurred over 500 million years ago, continues to puzzle evolutionists. Recent discoveries have narrowed the time frame from over 70 million years to less than 10 million years. This has only complicated their dilemma because so many different creatures appear in the Cambrian with no ancestors or intermediates. The major evolutionary innovations represented in the Cambrian would ordinarily require at least tens of millions of years to accomplish. Some might even suggest over 100 million years would be required. The differences between the creatures that suddenly appear in the Cambrian are enormous. In fact these differences are so large many of these animals are one of a kind. Nothing like them existed before and nothing like them has ever appeared again.

In fact, a question that is just as perplexing as how this explosion of diversity could occur so fast, is why hasn't such drastic change ever happened in the 500 million years since? The same basic body plans that arose in the Cambrian remain

surprisingly constant ever since. Apparently, the most significant biological changes in the history of the earth occurred in less than ten million years, and for 500 million years afterward, this level of change never happened again. Why not? This may seem like a simple question, but it is far more complicated than it appears.

Many biologists think the answer must lie within the genetic structure of organisms. During the Cambrian, new forms of life could readily appear because the genetic organization of organisms was relatively loose. Once all these body plans came into existence and were successful, then these same genetic structures became relatively inflexible in order to preserve what worked so well. In other words there may be genetically built-in limits to change. Developmental biologist Rudolf Raff said, “There must be limits to change. After all we’ve had these same old body plans for half a billion years.” Lane Lester and I coauthored a book over ten years ago titled *The Natural Limits to Biological Change*. Though the limits to change we proposed were tighter than what these evolution scientists are proposing, it is the same basic idea. We even suggested that these limits to change would be found in the genetic organization and regulatory programs that are already built in.

Some evolutionists have gone so far as to suggest that the mechanisms of evolution operating in the Cambrian were probably radically different from what has taken place ever since. This raises the possibility that we may never be able to study these mechanisms because animals with the proper genetic structure no longer exist. We are left only with the products of the Cambrian explosion and none of the precursors. The speculations will therefore be wild and uncontrollable since there will be no way to test these theories. Fossils leave no trace of their genetic organization. We may never be able to know how this marvelous burst of creativity occurred. Sounds like evolutionists may be faced with the very same

problems they accuse creationists of stumbling over: a process that was unique to the past, unobservable in any shape or form, and unrepeatable.

Stuart Kaufmann, a leader in complexity theory, places his faith in self-organizing systems that spontaneously give rise to order out of chaos—a sort of a naturalistic, impersonal self-creator. A supernatural Creator performs the same function with the added benefit of providing a source of intelligent design as well.

Marvelous Evidence of Creation and Design and the Role of World View

So often at Probe our focus is on some issue that has the opposing forces shaped by worldview. A worldview is a system of beliefs or philosophy of life that helps us to interpret the world around us. We often compare one's worldview to a pair of glasses that helps bring everything into focus. Just as it is important for someone with impaired vision to have the right prescription glasses, so it is also necessary for sin-impaired people to have the right world view with which to make sense of the world of ideas around us.

Clearly we believe that the Bible offers the only tool to arrive at the right prescription or worldview. We have been discussing here Evolution's Big Bang, the Cambrian explosion of life approximately 543 million years ago according to evolutionists. The latest discoveries in this field were highlighted in *Time* magazine's 4 December 1995 issue. Three weeks later, some very interesting letters appeared from readers in *Time*. They are very instructive of the effects of one's worldview when evaluating the very same evidence. Much of our time in this pamphlet has been spent detailing the vast problems that the Cambrian explosion produces for evolutionary theory. But that is from the vantage point of a biblical worldview. One *Time* magazine reader commented, "This report

should end discussions about whether God created the earth. Now there is no way to deny the theory of evolution." Another reader said, "It is great to see a national magazine put the factual evidence of evolution's vast, complex story out there for the lay public."

Now, before you go assuming that they surely didn't read the same story I have been describing in these pages, listen to these readers with a different perspective. "A more appropriate title for your article could have been 'Evolution's Big Bust.' One hundred and thirty-five years of Darwinism out the window just like that? What a poor excuse for the lack of transitional forms." Another reader said, "This story read more like confirmation for Noah's Deluge than Darwin's theory of evolution."

Well, they all read the same story. Many even quoted from the article to explain their views. So, how can four people read the same information and come to such radically different conclusions? The difference is worldview. To those who are working within a naturalistic worldview, one which holds that there is no God, some form of evolution must be true. Therefore, while the evidence of the Cambrian may be perplexing, the fact that scientists are wrestling with it and offering some possible explanations is exciting and invigorating. However, I find that they are usually missing the big picture. By concentrating on explaining the minutiae, naturalistic thinkers often miss the clear possibility of intelligent design precisely because they don't expect to find any.

A great example of this is a comment by Harvard's Steven Jay Gould on the Cambrian creatures found in the Burgess Shale of Canada:

> *Imagine an organism built of a hundred basic features, with twenty possible forms per feature. The grab bag contains a hundred compartments, with twenty tokens in each. To make a*

> *new Burgess creature, the Great-Token-Stringer takes one token at random from each compartment and strings them together. Voila, the creature works—and you have nearly as many successful experiments as a musical scale can build catchy tunes.*

Sounds like a marvelous description of a Creator to me, but perhaps only if you are thinking biblically from the start.

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Euthanasia: The Battle for Life from a Christian Viewpoint

Dr. Bohlin approaches this issue from a biblical worldview. As a Christian, he looks at current events and attitudes in this sad area and points out that popular sentiments may be far from biblical and godly.

Physician-Assisted Suicide in the United States

On March 6, 1996, the Ninth U. S. Circuit Court of Appeals struck down Washington state's ban on physician-assisted suicide. By a surprisingly commanding 8-3 vote, the court ruled that terminally- ill adults have a constitutional right to end their lives. Essentially, the court decided that an individual's right to determine the time and manner of his own death outweighed the state's duty to preserve life. This ruling will also likely uphold Oregon's voter approved doctor-

assisted suicide law that has been bogged down in the courts.

The only recourse now is the Supreme Court, which is not expected to overrule the Appeals Court's decisions. On April 2, the Second U.S. Circuit Court of Appeals ruled that New York state's bans on assisted-suicide were "discriminatory." Then on May 15, 1996, Dr. Jack Kevorkian, the infamous "Dr. Death," was acquitted for a third time of doctor-assisted suicide in the state of Michigan.

The stage is set for a revolution in the law concerning euthanasia in this country. Kevorkian's escapes from the law and these recent rulings from the Appeals Courts will further encourage the "right- to-die" lobby which seeks to make doctor-assisted suicide the law of the land. What will be overlooked is over 2,000 years of medical practice and ethical codes. The Hippocratic Oath, originating in 400 B.C., and the standard for medical practice ever since, states, "I will keep [the sick] from harm and injustice. I will neither give a deadly drug to anybody if asked for it, nor will I make a suggestion to that effect."

Allowing doctors to end life as well as preserve life would change the face of the entire medical community.The doctor/patient relationship will be forever compromised. Is your doctor's advice truly in your best interests or in his best interest to rid the hospital and himself of a pesky patient and situation?

Dr. Thomas Beam, chairman of the Medical Ethics Commission of the Christian Medical and Dental Society points out, "While the act of physician-assisted suicide seems compassionate on the surface, it is often the abandonment of the patient in their most needy time. Instead of support, the patient may only find confirmation of the hopelessness of their condition and physician-assisted suicide is legitimized as the only 'way.'"(1) It is not terribly difficult to see how this circumstance would undermine the delicate relationship between

a doctor and his patient.

Surely, you say, most people don't agree with the policy of doctor- assisted suicide. However, the *New England Journal of Medicine* reported a poll from the state of Michigan which indicated that "66 percent of state residents and 56 percent of Michigan doctors would prefer that doctor-assisted suicide be legalized not outlawed."(2) And even though doctor-assisted laws were defeated in referendums in California and Washington, the defeats were narrow. And a similar law was finally passed in Oregon in 1994. In addition, 23 states are now considering such legislation. And as mentioned earlier, two different Appeals Courts have ruled in favor of doctor-assisted laws. In this essay I will examine why so many favor legalization of assisted suicide. I will take a close look at Dr. Jack Kevorkian, the most visible proponent of assisted suicide. Also, I will examine what the Bible has to say about life, death, and God's sovereignty. Finally, I will discuss some test cases and inform you about what you can do to combat this growing evil in our land.

Who is Dr. Jack Kevorkian and Why Do People Seek His Help?

Why is such a large segment of our society, over 60% in some communities, enamored with the possibility of physician-assisted suicide? While there can be many roads that will lead to this conclusion, the primary one is fear. People today fear being at the mercy of technology, of being kept alive with no hope of recovery by machines. Few seem to realize that it is already legal for a terminally ill patient to refuse life-prolonging measures. We must realize that there is a difference between simply allowing nature to take its course when someone is clearly dying and taking direct measures to hasten someone's death. Former Surgeon General C. Everett Koop acknowledges,

> *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.(3)*

Extraordinary measures are not required to keep a dying person alive at all costs. But some people fear exactly that. Removing this fear will take a lot of the wind out of the euthanasia sails.

Secondly, people fear the pain of the dying process. Intractable pain is a real fear, but few people today realize that most of the pain of terminally ill patients can be dealt with. Many doctors, particularly in the U.S., are not aware of all the measures at their disposal. There are new ways of administering morphine, for example, that can achieve effective pain management with lower doses and therefore a lower risk of respiratory complications.

Dr. Paul Cundiff, practicing oncologist and hospice care physician with 18 years of experience treating dying patients says,

> *It is a disgrace that the majority of our health care providers lack the knowledge and the skills to treat pain and other symptoms of terminal disease properly. The absence of palliative caretraining for medical professionals results in sub-optimal care for almost all terminally ill patients and elicits the wish to hasten their own deaths in a few.(4)*

But many would even be willing to live with the pain if they knew that they would not be left alone. The growth in the hospice movement will help alleviate this fear as well. The staff at a hospice is trained to deal not only with physical

pain, but with psychological, social, and spiritual pain as well. If you have seen pictures of the many people Jack Kevorkian has assisted to commit suicide, you cannot help but notice that these are lonely, miserable people. Pain has had little to do with their desire to commit suicide. As a nation we have in large part abandoned our elderly population. When God commanded Israel to honor their fathers and their mothers, this was understood to mean primarily in their older years. Extended families no longer live together even when the medical needs of parents are not severe or terribly limiting. No one wants to be a burden or to be burdened.

Dr. Jack Kevorkian is a retired pathologist with essentially no training in patient care. He is simply on a personal mission to bring about legalized physician-assisted suicide to help usher in a code of ethics based totally on relativism. "Ethics must change as the situation changes," he says. "That's the way to keep control. Not by an inflexible maxim that applies for two thousand years, but an ethical code that will change a decade later."(5) Right now Kevorkian's victims are the few lonely and desperate individuals who seek him out. The future victims of his crusade will not only be those who wish to die, but those whom doctors and relatives feel should die.

The Lessons of Holland

One of the primary reasons for concern about the legalization of physician-assisted suicide is the now runaway death culture of Holland. Doctor-assisted suicide was essentially legalized in Holland in 1973 by two court decisions. While not officially legalizing euthanasia in Holland, the courts simply said that if you follow certain guidelines you will not be prosecuted.

The problem is that any such regulations are not enforceable. As a result, the government of Netherlands reported in 1991 that only 41% of the doctors obey the rules and 27% admitted

to performing involuntary euthanasia. That is, without the patient's consent! In addition, over 2% of the deaths in Holland in 1990 were the result of direct voluntary euthanasia, but 6% of all deaths were the result of involuntary euthanasia.

Many people in Holland today carry around a card that states they are not to be euthanized without their consent! That is precisely where we are headed. Once a right to physician-assisted suicide is established as it was in Holland, it soon degenerates into others being willing and able to make the decision for you.(6)

In Holland, doctors performed involuntary killing because they thought the family had suffered too much; some were tired of taking care of patients, and one was mad at his patient!(7) Even the conditions of allowed voluntary euthanasia are appalling. Robin Bernhoft, a U.S. surgeon of the liver and pancreas, relates an incident where a doctor in Holland told of a 26 year-old ballerina with arthritis in her toes requesting to be euthanized. Apparently since she could no longer pursue her career as a dancer, she was depressed and no longer wished to live. Amazingly, the doctor complied with her request. His only justification was to say that "One doesn't enjoy such things, but it was her choice!"(8)

With this in mind, when the discussion of guidelines comes up, remember that in Holland, guidelines were useless. Enforcement is near impossible, and families and doctors as well as patients will succumb to the pressures of pain, depression and inconvenience. Sadly, pain and depression are treatable. There have been tremendous advancements in pain management which the American medical community is only recently being brought up to speed on. Depression can also be addressed but some patients, families, and doctors are often too impatient and lacking in genuine compassion to do the hard work to bring someone out of a depression. It is easier to offer help in suicide.

The lessons of Holland need to reinforce in our minds the necessity of making as many people aware of the dangers as possible. Since our society is now dominated by a worldview that prizes individual autonomy and shuns any mention of Biblical ethics, it can be very easy, yet ultimately, deadly, to go along with the crowd.

Why Life Is Worth Living: What the Bible Teaches

As we discuss the issue of euthanasia and physician-assisted suicide, it is critical that we not only understand what is going on in the world around us but that we also understand what the Bible clearly teaches about, life, death, pain, suffering, and the value of each human life.

First, The Bible teaches that we are made in the image of God and therefore, every human life is sacred (Genesis 1:26). In Psalm 139:13-16 we learn that each of us is fearfully and wonderfully made. God himself has knit us together in our mother's womb. We must be very important to Him if He has taken such care to bring us into existence.

Second, the Bible is very clear that God is sovereign over life, death and judgement.In Deuteronomy 32:39 The Lord says, "See now that I myself am He! There is no god besides me, **I** put to death and **I** bring to life, **I** have wounded and **I** will heal, and no one can deliver out of my hand." Psalm 139:16 says that it is God who has ordained all of our days before there is even one of them.Paul says essentially the same thing in Ephesians 1:11.

Third, to assist someone in committing suicide is to commit murder and this breaks God's unequivocal commandment in Exodus 20:13.

Fourth, God's purposes are beyond our understanding. We often appeal to God as to why some tragedy has happened to us or

someone we know. Yet listen to Job's reply to the Lord in Job 42:1-3:

> *I know that you can do all things; no plan of yours can be thwarted. [You asked,] 'Who is this that obscures My counsel without knowledge?' Surely I spoke of things I did not understand,things too wonderful for me to know.*

We forget that our minds are finite and His is infinite. We cannot always expect to understand all of what God is about. To think that we can step in and declare that someone's life is no longer worth living is simply not our decision to make. Only God knows when it is time. In Isaiah 55:8-9 the Lord declares, "For my thoughts are not your thoughts, neither are your ways my ways. As the heavens are higher than the earth, so are my ways higher your ways and my thoughts higher than your thoughts."

Fifth, our bodies belong to God anyway. Paul reminds us in 1 Corinthians 6:15,19 that we are members of Christ's body and that we have been bought with a price. Therefore we should glorify God with our bodies. The only one to receive glory when someone requests doctor-assisted suicide is not God, not the doctor, not even the family but the patient for being willing to "nobly" face the realities of life and "unselfishly" end everyone else's misery. There is no glory for God in this decision.

Lastly, suffering draws us closer to God. In light of the euthanasia controversy, listen to Paul's words from 2 Corinthians 1:8:

> *We were under great pressure, far beyond our ability to endure, so that we despaired even of life. Indeed, in our hearts we felt the sentence of death. But this happened that we might not rely on ourselves but on God, who raises the dead.*

Not only does He raise the dead but there is nothing that can separate us from His love (Romans 8:38). For an inspiring and thoroughly biblical discussion of the euthanasia issue, read Joni Earickson Tada's book *When is it Right to Die?* (Zondervan, 1992). Her testimony and clear thinking is in stark contrast to the conventional wisdom of the world today. We must do the same.

What Will You Do? What Can You Do?

The Christian Medical and Dental Society has produced an excellent resource on physician-assisted suicide titled *The Battle for Life.*(9) As a part of the package they provide several cases to test your grasp of the principles involved and to help Christians be aware of the tough decisions that have to be made. I would like to share two of those with you and then discuss what you can do now to combat the "right to die" forces in this country.

Here is test case one:

> *Your 80 year-old grandmother has been fighting cancer for some time now and feels the emotional strain. She feels like she'll become a burden to the family. Her doctor notes that she seems to have lost her desire to live. Should she be able to have her doctor give her a prescription expressly designed to kill her?*

This is precisely what the courts have legalized in recent months and precisely what God's word says is wrong. It is wrong because it would be taking her life into our hands and violating God's sovereignty. Because physician-assisted suicide goes beyond letting someone die naturally to actually causing the death, it violates God's commandment, You shall not murder. There is a clear distinction between allowing death to take its natural course in someone who is clearly dying with no hope of a cure, and taking specific measures to

end someone's life. There comes a time when the body is imminently dying. Bodily functions begin to shut down. At this point, people should be made as comfortable as possible, be supported and encouraged by their family and doctors, and allowed to die. This is death with dignity. Taking a lethal injection or breathing poisonous carbon monoxide takes life out of God's hands and into our own.

Test case number two:

> *Your spouse has an incurable fatal disease, has lost control of bodily functions and is unable to communicate. Special treatment and equipment can extend your spouse's life for a few weeks or even months but will involve much pain and exhaustion. Would it be morally right for you to not arrange for the treatment?*

Many would accept a decision not to arrange for treatment because that would not be killing but simply allowing death to take its natural course. Such decisions are not always clear-cut, however, and a physician and family members must take into account the pros and cons of intervention versus a faster natural death. Sometimes we rationalize that we need to keep the patient alive as long as possible because God may still work a miracle. But just how much time does God need to work a miracle? If God is going to intervene He will do so on His time and not ours.

Now that we have a better understanding of the issues, you may be wondering just what we can do about this threat among us. Three things:

Pray – Pray that God will turn the hearts of people back to Himself and back to protecting life. Pray for righteousness and justice in our legal system, that we enact laws that preserve life, punish the guilty and protect the innocent.

Speak Out – Present this information to other groups. Talk

with your friends and family and discuss the reasons for protecting life.Contact your state and federal legislators and tell them to stand against physician-assisted suicide.

Reach Out – Visit the elderly, care for those who can't care for themselves, comfort the sick. Consider joining or starting a church ministry to the elderly, handicapped, or other individuals with special needs. As Christians we must lead the way with our hearts and actions and not just our words. If we devote our energies to providing quality and loving care and effective pain control, the euthanasia issue will die from a lack of interest.

Notes

1. "Why is Life Worth Living: An Overview of Physician-Assisted Suicide." *The Battle for Life: An Educational Resource Kit*. Christian Medical and Dental Society, P.O. Box 5, Bristol TN 37621. 1996.

2. Cited in "Kevorkian going on trial on assisted-suicide charge," *The New York Times*, 12 Feb. 1996, National Report, A8.

3. C. Everett Koop. The Surgeon General on Euthanasia. *Presbyterian Journal*. Sept. 25, 1985:8.

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5. Jack Kevorkian. 1990. Quoted in "Kevorkian: A Glimpse into the Future of Euthanasia?" by Sarah Sullivan. *Christian Research Journal* 18(4)23-27, 1996.

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P.J. van der Maas. 1991. "Euthanasia and Other Medical Decisions Concerning the End of Life." *Lancet* 338:669-74.

7. “California’s Proposition 161 and Euthanasia.” 1992. *CURRENTS in Science, Technology, and Society* 1(2):11. Published by Access Research Network, P.O. Box 38069, Colorado Springs, CO 80937-8069.

8. Robin Bernhoft, M.D. 1995. Quoted in *Euthanasia: False Light*. Produced by IAETF, P.O. Box 760, Steubenville, OH 43952. Running time: 14:48.

9. *The Battle for Life* is an educational resource kit produced by the Christian Medical and Dental Society. The Kit includes an award winning video, *Euthanasia: False Light*, a leader’s presentation guide with discussion questions, handouts for Christian and secular audiences, overhead transparencies, Biblical principles summary, research synopsis, cassette tape of public service announcements, and bulletin inserts. The Kit is available from the Christian Medical and Dental Society, P.O. Box 5, Bristol, TN 37621, Phone (615) 844-1000, FAX: (615) 844-1005. The retail price for the complete kit is $30.

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World Population

The battle to feed all of humanity is over. In the 1970s the world will undergo famines; hundreds of millions of people are going to starve to death in spite of any crash programs embarked upon now.

So predicted Stanford professor Paul Erhlich in his widely influential 1968 book *The Population Bomb*. It sold more than three million copies but its many predictions of global catastrophe never came true. Most famines in the 70s and 80s

were in African countries saddled with Marxist governments or political turmoil.

Has Erhlich admitted these errors? No, in 1989 he wrote *The Population Explosion*. Without comment on his past mistakes he merely moves them into the future again, like those who predict the end of the world. Erhlich wrote,

> *The Population Bomb tried to alert people to the connection of population growth to such events…but society has turned a deaf ear. Meanwhile, a largely prospective disaster has turned into the real thing…. There still may be time to limit the scope of the impending catastrophe, but not much time.*

Are we really that close to disaster? In September of 1989 the *Scientific American* published a series of articles on "Managing Planet Earth." While somewhat pessimistic in tone, they are generally balanced in their reviews. In an article on "Strategies for Agriculture" the authors conclude, "World food production could grow significantly more slowly than the current rate and there would still be enough food for 10 million mouths by the time they arrive."

In 1968 Erhlich forecast "[I]f…our population growth, and our water use continue, in 1984 the United States will quite literally be drying up." He also declared "Lake Erie has died…. Lake Michigan will soon follow it in extinction." In fact, Lake Erie has been reclaimed, and we have not exactly dried up either.

In 1980 Julian Simon, an advocate of population growth to fuel economic growth, bet Paul Erhlich $1,000 that prices of five non- renewable metals would go down. For years, Ehrlich and others had been prophesying that the world would soon run out of many metals, halting industrial growth. They claimed that the world's supplies of oil and gas would soon be exhausted and the West would be subjected to crippling shortages. In 1990 Erhlich quietly paid Simon the $1,000. Not only had the

price of all five metals dropped, but the known world reserves has gone up!

In his 1989 book, *The Population Explosion*, Erhlich not only continues to predict apocalyptic devastation, but he connects population growth to many social problems we are currently facing. Most people are unaware," he writes, "of the role that overpopulation plays in many of the problems oppressing them…. Visitors to our nation's capital find homeless people sleeping in the park opposite the White House, and drug abuse and crime sprees fill the evening news. News about the AIDS epidemic seems to be everywhere."

It is certainly true that homelessness and AIDS are terrible problems, but to blame them on overpopulation in America seems either a display of great ignorance (unlikely, as Erhlich is a Stanford professor) or willful misinformation.

Are There Really Too Many People?

In the book of Genesis, Adam and Eve were given the command to multiply and fill the earth. In Genesis 9 Noah is given the same charge. We must consider the rest of the creation as we determine if we have yet fulfilled that command. But world population is not the problem.

We share the planet with 5.7 billion people. If one could stand all the people in the world, men, women and children two feet apart, how much of the world would they take up? All of Africa? All of North America? New York state? If every person alive today stood two feet apart they would fill less than the area of Dallas County! And there would still be room for all the buildings! If the world's people were put together into families of four living on 50′ by 100′ lots, they could all live in the state of Texas, with more than seven thousand square miles left over. So the total number of people is not the real problem, at least at this point.

One of the statements one hears with depressing regularity in discussions of world population is “If the present rate continues. …” But in fact the “present rate” is almost never continuing. Consider a frequently used figure, the doubling time for a country. This is the time it takes for a nation of 100 million people to reach 200 million. It is also a measure of how fast new food supplies must be found. The faster the doubling time the more urgent the need for agricultural development.

In 1968 the world’s doubling time was about every 35 years. This was frequently used as the basis for pronouncements that “if the present rates continue” the world will be faced with mass starvation in some small number of years.

But the “present rate” was already declining, and the world now doubles about every 82 years. And more conservative scholars had pointed this out years ago. As the standard of living of a country increases, its doubling time also increases. Thus the developed nations are close to stability now, and as less developed nations become more industrialized their population growth also slows. That is the basis on which many experts predict that the world population will stabilize at about ten to eleven billion people.

Malthus’s essay “On the Principle of Population,” has, as he himself said, “a melancholy hue” about it. It was Malthus, with his view that human populations would soon overtake food production, who inspired the labeling of economics as the “dismal science.” But was Malthus right?

Malthus assumed that food supplies would always limit population growth. But in the two hundred years since he wrote, this has not been the case. By one means or another farmers and agricultural scientists have always found a way to increase farm production to keep up with population growth. But we have yet to find efficient ways to get food from where it is produced to where it is needed most.

One Christian has seriously suggested that old oil tankers, which now sit unused because of the huge world supply of oil, could be put back into service cheaply transporting grain from producers to consumers.

The fact that we have 5.7 billion people in the world is not why we have starving people. We have the surplus food to feed all the world's people. What we do not have are stable governments and economic opportunities that allow people to earn a fair wage for their labor.

Alarmism and Faulty Predictions

In his 1968 book *The Population Explosion*, Paul Erhlich announces the approaching food crisis. "'Then, in 1965-66 came the first dramatic blow…mankind suffered a shocking defeat in…the war on hunger.' In 1966, while the population of the world increased by some 70 million people, there was no compensatory increase in food production." He continues by laying out likely scenarios of the world being rocked by food rebellions that will lead to nuclear war and the devastation of the planet, possibly leaving cockroaches as the most intelligent creatures on earth.

Fortunately Erhlich was wrong. Food production continued to increase and more than keep pace with the population. So what did Erhlich learn?

In 1989 he wrote another book, *The Population Explosion*. Doom was again close: "In 1988, for the first time since World War II, the United States consumed more grain than it grew…only the presence of large carryover stocks prevented a serious food crisis. It is not clear how easy it will be to restore those stocks."

Again, thankfully, Erhlich was wrong. By 1990, world grain production was up 50% from 1988! And it has continued to increase to the present.

Erhlich's inaccurate prophecies are numerous. In 1968 he quotes Louis H. Bean approvingly: "My examination of the trend of India's grain production over the last eighteen years leads me to the conclusion that the present 1967 1968 production…is at a maximum level." But in seven years India increased its grain production by nearly 26%! By 1992 it had increased it 112%!

Famines are the exception in most countries, and even then absolute lack of food is usually not the problem. In a *Scientific American* article on world population one author says: "Food surpluses exist in many nations, and even when famines do occur the cause is much less the absence of food than its maldistribution which is often accentuated by politics and civil war, as in the Sudan." This passing comment touches on the real problem. Most famines in the last twenty years are a direct result of internal wars in African nations.

Whether in Ethiopia, Sudan, or Somalia, the devastating famines and the hopeless faces of dying children we have all seen on TV are the result of politics. As one segment of the population wars against another, starvation is often a political weapon. And in each of the famine-torn countries of Africa one can show that it has been disrupted distribution more than low food production that has caused people to starve to death.

The Bible itself gives evidence that population pressures do not cause famines. When is the first famine in the Bible? In Abraham's time, when the world population could not have been a problem. There have always been famines, but wise leaders have also known how to prepare for famines, as did Joseph later in Egypt.

Many researchers expect the world's population to level off between ten and eleven billion people. Two specialists predicted that "world food production could grow significantly more slowly than the current rate, and there would still be

enough food for 10 billion mouths by the time they come.”

The earth can provide all the food needed for the foreseeable future. So why are so many saying we must take powerful measures, like widespread abortion, to control world population?

Environmentalism and World Population

One of the driving forces behind much of the population explosion movement is that of environmental concern. People are afraid that the earth is being rapidly ruined, and they are sure that world population is one of the worst problems. Unfortunately there is some truth to this. There are areas in the world where too many people have been squeezed into one place, or where too many animals are grazing the grass to the ground. But these happen because other people do not care to help. The environment is damaged when people must choose between death by starvation and cutting down trees or overgrazing fields. What we need to protest is the way the people are treated, not their existence.

Many of the role models put forward by the environmental zealots often have very mixed messages. Paul Erhlich praises Prince Philip of Great Britain for having “taken courageous stands in the population issue and its connection to environmental problems.” But this is the same Prince Philip who, when asked what he would like to be reincarnated as, replied: a “killer virus to lower human population levels.” Certainly a princely thing to say.

There are also ecological movements that hate people. The Deep Ecology movement is one such loosely organized movement. Groups like Green Peace, Earth First!, and the Animal Liberation Front tend to see the human race as a cancer on the environment, something to be suspected and tolerated, but only in small numbers. Some want to see no more than 250 million people on earth; others wouldn’t mind if humans died out

altogether. These people see any large population as a problem, and are ready to take action to make the earth "right" again. Others have openly said that the AIDS virus is a good thing in that it will eliminate at least some people who are ruining the environment. Often the extreme positions of groups like these make other ecological organizations seem almost conservative by comparison.

Much of the time, people accept the argument that the earth is too crowded because that is all they hear. The media are usually not interested in reasoned, factual responses to problems because they lack the shock appeal that gets people to tune in, or read a paper, or buy a magazine. Thus, TV is filled with those who have extreme views, or who can speak eloquently about the latest crisis.

So how can Christians make a difference in all of this confusion? First, by actually being involved in caring for the creation God has given us charge of. Too many of us read in our Bibles about how God created the world and cares for it, but fail to act as if it were really true. Let us be actively involved in saving the creation, and then we may earn the right to speak about why we are doing it.

Most Christians were slow in protesting abortion; so too many of us have been slow in showing an active concern for the environment. The earth that God created can provide places to live and food for all that God has made. But just as we must take care of our own houses if we want them to last, so too we must take care of the earth God has given us to live in.

A Christian Response

The plight of starving people in other countries seems to be like many other major world problems so immense and complicated that we feel we can do little or nothing about them. We often feel overcome by the task before we even start. How should we begin? What should we do?

One stock statement of the environmental movement is “Think globally, act locally.” As Christians we should change this to “Pray globally, act locally.” Because our God has created the whole world, we, too, are to be concerned and to pray for it. Second, we can also show our concern by how we act in our own communities. And finally, we can give to those organizations that can act as our hands in other places.

Prayer is always our most powerful weapon. We need to be praying that God would make us sensitive to the needs of the world. Pray that God will help us be willing to give of what we have in order to help others. Pray that our lives will be an example to others of a real concern for the poor and hungry, just the way Jesus’ own life was.

We can also encourage our churches to consider issues like world population and caring for the creation in the larger picture of biblical teaching. Instead of “Earth Day,” why not “Creation Day?” Our churches should teach how stewardship can be lived in daily activities.

One good way to be involved is to give to a relief fund that not only feeds the hungry but also helps people develop the skills to farm more efficiently. Many relief organizations are involved in community programs such as improving the local water supply or teaching new crop rotation techniques. Seek out these organizations and give to them.

Get alternative sources of information. Best-selling books and TV programs usually follow the most sensational sources of what’s new. Find books that cover world hunger from different perspectives. Look in your local library. Write to Probe.

The problem in the world today is not that there are too many people. The earth can feed many more mouths than it currently does. But we must pray and work for justice to prevail in many of the countries that now suffer famines caused by political wars. More than enough food is produced each year to feed all

the people in the world. But we do need to increase the standard of living and develop agricultural resources in a way that does not destroy the land in the process. We need Christians trained in agriculture and resource management.

Why not consider a career in agriculture? It would be very difficult to get into Saudi Arabia as a missionary. But if you go as an agricultural consultant or an irrigation specialist you will be greeted with open arms. “Sustainable agriculture” is the need of the future, and if you train in this field you will be able to go to almost any less-developed country in the world. What a great way to be involved in a greater harvest of both food and souls for the kingdom of God.

When we look out at the world we must not just see teeming hordes of people but men and women for whom Christ gave His life. And as we consider our responsibility to the world around us we need to remember what the Psalmist said: “The earth is the LORD’s and all it contains” (Ps. 24:1).

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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 Origin of the Universe

What is the newest evidence for the Big Bang? The cosmic background radiation is exactly what was expected if the universe began as an immensely hot event 10-20 billion years ago. But the universe that was created is "just right" for life. Richard Milne explains that dozens of factors are exquisitely fine-tuned for life to be able to exist, at least on our planet.

What Was the Big Bang?

"If you're religious, this is like looking at God."{1}

A mystic, describing his vision in a trance? A poet, looking at the beauty of nature and seeing God? No, a Berkeley astrophysicist, commenting on the data he was making public in 1992 that seemed to confirm a basic expectation of the Big Bang theory.

Just what is the Big Bang theory of the origin of the universe? One scientist summed it up succinctly by saying: "The explosion from zero volume at zero time of a corpuscle of energy equivalent to the mass and radiation that now constitute the Universe."{2} What does that mean? It means

that everything we now see or know about was once compacted into an unimaginably small blip that suddenly expanded in a huge explosion that created the very space and time it was expanding into. Or as Calvin of *Calvin and Hobbes* put it, "The Horrendous Space Kablooie."

The Big Bang has become as much a part of our common science knowledge as dinosaurs, something we speak about with the same sense of familiarity we talk about atoms. But, like atoms, how much do we really know about this wondrous explosion of everything?

In this essay we'll talk about what scientists mean by the Big Bang theory, why it's often in the news, why some scientists oppose it, what it tells us about our home the universe, and what we as Christians can learn from all of this.

Science is often seen as attacking the God of the Bible, but in this case scientific discoveries seem to be revealing God's work. The Bible begins with the statement that God created the heavens and the earth, leaving no doubt that all we see had a beginning and had a Creator.

But by the 1700s many people accepted an earlier theory that Immanuel Kant made more popular. The theory held that the universe is an infinite expanse with no beginning and no end. This fit the philosophy of the time, as people did not want to think that they might have to face judgment by a God who had the power to both begin and end the universe.

In the roaring twenties, Edwin Hubble had begun to investigate mysterious masses of stars called nebulae. Some thought we were all part of one giant galaxy; others thought there might be a whole world of galaxies outside our own. Hubble was able to show that there are many galaxies besides our own. In 1929 he announced we were in a huge universe, so big it would take light billions of years to travel across it. Not only was it immense, but every part was moving away from every other part

at incredible speeds, some receding at 100 million miles an hour!

Priests do not enter into this story very often, but in the late 20s and early 30s a Belgian priest and mathematics teacher by the name of Georges Lemaître (who was fond of saying “There is no conflict between science and religion”) first constructed and then published a theory that changed the course of cosmology in the twentieth century. Taking Hubble’s observation that the galaxies were rapidly receding from one another, he ran the theory backwards to a time when all the matter in the universe was very close together. He called this the “primordial atom” and imagined a beginning when the whole universe exploded like “fireworks of unimaginable beauty” with a “big noise.”{3} Thus was born the Big Bang theory.

Why Is Everybody Excited?

Geffory Burbidge has been complaining recently that his colleagues in astronomy have been all too quick to join “the First Church of Christ of the Big Bang.” And what is causing this big rush? Findings from the Hubble Space telescope and the COBE (Cosmic Background Explorer) satellite that are confirming the Big Bang theory in unprecedented detail.

When the Big Bang was originally formulated about sixty years ago, not much thought was given to the conditions of the universe at the very beginning. But by the early 60s some scientists had realized that such an incredibly hot origin might have left slight traces behind. There might still be a whisper of the beginning of everything. This whisper would be a very small remnant of the heat of that first fiery instant.

In 1965 two Bell scientists announced they had indeed found such a remnant, a cosmic background radiation. This radiation, the signature of the heat of a long ago creation, was very close to what several theorists had rather off-handily

predicted some years before. Their paper had gone unnoticed because there was at that time no way to measure such a small signal, but when Arno Penzias and Robert Wilson, of Bell Laboratories, published their short article, it was quickly seen as confirmation of the Big Bang, and they received the Nobel Prize in 1978.

Then, in 1989, the United States launched the COBE satellite to look for details of the cosmic background radiation. The first evidence looked promising, but showed a background radiation so smooth that it was hard to understand how any cosmic structures like stars or galaxies could have formed. Unless there were some differences in the initial temperature of space, there would have been no reason for matter to cluster and form stars.

Then, in a dramatic press conference in 1992, George Smoot and others announced that they had found ripples of temperature differences in the radiation data. Even Stephen Hawking, the wheelchair-bound English astrophysicist, proclaimed, "It is the discovery of the century, if not of all time."{4} Every major newspaper in the world carried stories about the "echoes of creation." And many assumed that the Big Bang was proved.

But even as many scientists exulted in the new data, new questions also began to arise, but they were not questions about whether the Big Bang happened, but about how it progressed. For most scientists, the Big Bang theory is not "in trouble" as is sometimes reported. What is in question is how this sea of energy that was there in the first moments of the Big Bang was transformed into the myriad of galaxies, clusters, quasars, and other astronomical oddities.

Science, by its very nature, attempts to find the best explanation for observed phenomena. But the Big Bang has drawn an impenetrable curtain across the stage of history. For some this is a frustration: "This view of the origin of the universe is thoroughly unsatisfactory . . . . [because] the

origin of the Big Bang itself is not susceptible to discussion," fumes the editor of *Nature*.{5} But for others, the very impossibility of going behind the creation points to God in a powerful way. "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" (Rom. 1:20).

"Big Bang Theory Collapses"

The banner headline in *Nature* magazine read "Down with the Big Bang."{6} Sounding more like a 60s chant about the Establishment, the editorial was, however, very serious. And *Nature* magazine is perhaps the most respected science publication in the world. Why was the editor so exercised about the leading cosmological theory? Because it was "philosophically unacceptable." "The origin of the Big Bang is not susceptible to discussion," fumed John Maddox. And besides that "Creationists . . . have ample justification in the doctrine of the Big Bang." So, for Maddox, a scientific theory that is only rivaled in acceptance by evolution is "thoroughly unsatisfactory" because 1) it says that scientists cannot know everything, and 2) the theory might encourage belief in a creator. But materialists like Maddox are not alone.

"Big Bang Theory Collapses" shouted the title of an article written in a creationist journal. It went on to make such remarks as "The Big Bang theory has received one body blow after another" and "A cruel fate has befallen the grandest theory of all." They reported the "death knell of the cold-dark-matter theory" as if this were the main theory cosmologists had developed. Remarks suggesting results from the COBE satellite "should really make them wish they had gone into some other field" came across as very unprofessional. The description of scientists as "smug in their assurance" about the cosmic background radiation seemed more descriptive of this article itself than the theory it was attempting to

criticize.{7}

Young earth creationists find the Big Bang theory a failure primarily because it does not fit an interpretation of Genesis 1 that requires the universe be created less than 50,000 years ago. But what are the scientific problems with the Big Bang?

One continuing problem surrounding theories of the origin of the universe has been “How much matter is there in the universe?” It is generally agreed that there is indirect evidence of far more matter in the universe than we have been able to detect. But what form is this matter in? This so-called “missing mass” may, by some estimates, make up 90% of all the matter in the universe. But where is it? Several theories attempt to answer this question, but at the moment, there are not many ways to test competing theories.

Another continuing problem is finding out what caused the clumpiness of the universe? When we look out into the sea of galaxies that surrounds our own, we find that the swirling pools of stars are not evenly distributed in space but rather segregated into “walls” separated by “voids.” It is not yet known what accounts for this foam-like structure, but any theory of galaxy formation needs to provide an answer.

So, while the Big Bang certainly has difficulties, and may be replaced some day, it has also been the basis for many correct predictions about the structure of the universe. Like any scientific theory, the Big Bang is not a static idea but a theory that is always open to new information that may change its basic form, or lead to its rejection, or merely confirm that it is indeed correct. But, especially for Christians, it’s ironic that while most scientists have been searching for a naturalistic answer for the origin of the universe, they have instead, ended up with a theory that points strongly to a Creator.

A “Just Right” Universe

Imagine piles of dimes stacked on all of North America as high as the moon. More than you could possibly ever count. Then imagine a billion other continents covered over with more dimes. Now, somewhere in those billion piles, hide one red dime. What are the chances of taking a blind-folded person out into these piles and having them pick up the one red dime on the first try. Not likely? Well, the odds of the universe just happening to have the correct number of protons and electrons is the same as the odds for getting the red dime the first time. And if the universe did not have just the right ratio of these particles, galaxies, stars, and planets could never have formed, let alone people and all the rest of nature.{8}

In the last fifteen years, scientists who study the make up of our solar system, and the stars in our galaxy, have come to the conclusion that unless conditions had been perfectly fine-tuned for us, life could never have arisen on planet Earth even by evolution. Every time we learn something about the form of the universe, we find new reasons to glorify God, and to thank Him for His creation.

Arno Penzias, who with Robert Wilson was awarded the Nobel Prize for detecting the cosmic background radiation in 1965, much later remarked that: “Astronomy leads us to a unique event, a universe which was created out of nothing, one with the very delicate balance needed to provide exactly the conditions required to permit life, and one which has an underlying (one might say supernatural’) plan.”{9}

Robert Griffiths summarized it nicely when he said: “If we need an atheist for a debate, I go to the philosophy department. The physics department isn’t much use.”{10} Obviously those physicists know too much.

When Paul talks about what all people know about God, he points to the natural world as the foremost witness (Rom.

1:20). And, in these last years of the twentieth century, as we discover more and more about the conditions necessary for life, we find everywhere signs that we could not possibly be here by chance. Every detail of the basic structure of nature, even such things as how far away the moon is from the earth, must be fine-tuned to an unprecedented degree for us to live here on earth.

In the design of the universe, in the construction of our solar system, and in the very systems of our own earth, there is immense evidence of planning. The Big Bang theory provides strong evidence of fine tuning so clear that even a dogmatic atheist such as Sir Fred Hoyle was moved to affirm that "a superintellect has monkeyed with physics, as well as with chemistry and biology"{11} to create a world for humans to live in.

Will we give glory to God for His great creation, or will we continue to proclaim that we are merely the chance creations of a random process of undirected evolution? The choice is ours.

What Can Christians Learn?

"The scientist's pursuit of the past ends in the moment of creation. This is an exceedingly strange development, unexpected by all but the theologians. They have always accepted the word of the Bible: In the beginning God created heaven and earth."{12} This has been a difficult lesson for scientists, and many have yet to learn it. But what lessons can Christians learn from the search for Big Bang?

One of the primary lessons is that we need to know what it is a theorist is trying to prove. Often, as one reads the literature, one sees some rather clear statements about why certain possibilities are chosen. As is often the case, Sir Fred Hoyle is a good example: "This possibility [of a steady

state universe] seemed attractive, especially when taken in conjunction with the aesthetic objections to the creation of the universe in the remote past."{13} Hoyle is very clearly saying that, because he disliked the idea that the universe might have been "created" sometime in the past, perhaps by God, he would seek to develop another theory that avoids that possibility.

A second lesson is that we must be careful of the role we give to science. A scientist very astutely observed that "We live…in an age obsessed with scientific sanctification and technological authority.' If creationism is judged scientific, America will respect it."{14} His point is that Christians, like everyone else, have fallen prey to the idea that if an idea is judged "scientific" it must be right. The phrase "scientific creationism" is an excellent example of this tendency. But is science really the final judge of truth? For the Christian, and anyone else who believes that not all of what makes humans both beautiful and unique is measurable, the answer must be "No." Science is a good companion, but not a good guide. Whenever Christians have wedded themselves to a scientific theory they have suffered through painful divorces when that theory has proved to be an unfaithful guide to the world. The church's acceptance of an Aristotelian unmoved earth is but one example of the church not recognizing that science can and will change. The Big Bang may be today's best theory, but, as one of the best scientific authors on the Big Bang has written: "[O]ne ought to take the extrapolations back to the beginning of time with a healthy dose of skepticism. The Big Bang cosmology may yet be superseded."{15}

Whether we are young earth creationists or materialistic evolutionists, this warning is equally true. The Big Bang is the best answer we have at this moment. It may change next year, and by next century it will almost surely have changed, perhaps dramatically. If science fully supports our view of Scripture now, will we be willing to change it when science

changes? The Bible is beautifully clear that “The heavens are telling of the glory of God; And their expanse is declaring the work of His hands” (Psalm 19:1), but we must admit that we are not always clear exactly what the details of the message are. It is God’s glory that we must be clear about.

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Notes

1. *Scientific American*, July 1992, 34.
2. *Nature*, 356:731 (30 April 1992), unsigned opinion.
3. *Los Angeles Times*, 12 January 1933. Quoted in Timothy Ferris, *Coming of Age in the Milky Way* (New York: William Morrow, 1988), 211.
4. Hugh Ross, *The Creator and the Cosmos*, second expanded edition (Colorado Springs, Col.: NavPress, 1995), 19.
5. *Nature*, John Maddox, 340:425 (10 August 1989).
6. Ibid.
7. Duane T. Gish, “Big Bang Theory Collapses,” Impact #216, June 1991.
8. Hugh Ross, *The Creator and the Cosmos*, chapter 14.
9. Ibid., 122.
10. Ibid., 123.
11. Ibid., 121.
12. Robert Jastrow, *God and the Astronomers* (New York: W.W. Norton, 1978), 115.
13. Hugh Ross, *The Fingerprint of God* (Orange, Calif.: Promise Publishing, 1989), 76.
14. *Discover*, March 1987, 6.
15. *Nature*, Joseph Silk, 322:505 (7 August 1986).

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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