The Privileged Planet

An Unwanted Premiere!

In June 2005 I was in Washington D.C. for a most unusual premiere. A film based on the 2004 book called *The Privileged Planet*{1} was being introduced to an invitation only group of about 200 at the Smithsonian Institution's National Museum of Natural History.

The Smithsonian was approached several months earlier about allowing their Baird Auditorium to be used for this special showing. They asked to see the film. Several people on the museum payroll viewed the film and said great, let's show it. The inquiring organization was The Discovery Institute, the leading organization promoting Intelligent Design in the U.S. and abroad. Discovery was given instructions on how to use the Smithsonian logo on the invitation, was asked for a donation of $16,000, and told the premiere was a go.

However, when the invitations went out in late May, the Smithsonian was instantly barraged by calls and emails from disgruntled Darwinians demanding that the premiere be canceled. How dare the prestigious Smithsonian give aid and support to the Intelligent Design Movement by allowing this film on its premises? Never mind that the film has nothing to do with biological evolution and natural selection. People (even some who likely hadn't seen the film or read the book) were on a rampage.

It didn't take long for the Smithsonian to withdraw its co-sponsorship of the event although they said they would honor their commitment to allow the film to be shown. In a letter to Discovery they said, "Upon further review, the Museum has determined that the content of the film is not consistent with the mission of the Smithsonian Institution's scientific

research."{2} Initially, the Smithsonian said Discovery would not be required to make the "donation," but eventually kept $5,000 for expenses incurred.

As a Fellow of the Discovery Institute's Center for Science and Culture I was issued an invitation, and as the storm of controversy raged in *The Washington Post* and *New York Times*, I decided to get myself to Washington for this controversial and special event.

The premiere itself was a bit of an anticlimax after all the fuss. Several local scientists, national TV and newspaper media, a Congressman from Texas, and other local dignitaries were treated to a special showing and question and answer period with the authors, Gonzalez and Richards. The reception was held two floors up in the Hall of Geology, Gems, and Minerals.

Most in attendance were quite impressed . . . and mystified! They were impressed with the quality and premise of the film and mystified how a purely scientific film could be so misrepresented. In what follows, we'll explore the thesis of the book and film and see what all the fuss is about. For now, just remember science is pursued by *people*, and everyone has a worldview that can alter dramatically how science is perceived and what counts as science.

Is the Moon Just for Signs and Seasons?

When I was in the seventh grade, I remember standing in my best friend's backyard with a box over my head in broad daylight. On one end of the box was a small pinhole. On the inside of the box, against the opposite side of the box from the pinhole, was a small piece of aluminum foil. The pinhole, when facing the sun, made a small circle, maybe one-half inch in diameter, on the aluminum foil wall. As the partial solar eclipse progressed, I could watch the progress of the moon shadowing the sun inside the box. I was fascinated that I

could safely watch the partial solar eclipse with such a simple device.

You could watch partial solar eclipses on every planet in our solar system with a moon. But earth is the only planet where a full or total solar eclipse can be seen. It turns out that our moon is $1/400^{th}$ the size of the sun. But the sun is 400 times farther away from earth than the moon. So when the moon comes between the sun and the earth a small portion of earth experiences a total solar eclipse, meaning the sun is fully blocked out by the moon.

When a total solar eclipse occurs, the sun is fully blocked out by the moon darkening the earth and providing a unique glimpse of the sun's atmosphere or corona. Normally the sun's corona is overwhelmed by the sun's brightness, but in an eclipse the moon so completely shuts out the sun that the corona shines brightly for a few minutes. It is then that scientists can measure the light spectrum of the corona which reveals what is burning inside the sun. Otherwise we would not be able to measure the elemental makeup of the sun. So the fact that earth experiences a total eclipse of the sun makes our planet unique in the solar system with respect to what we can learn about what goes on in the sun's interior.

If that was all that was unique about our moon, we could write it off as a curious coincidence. But the size, shape, and orbit of our moon do more for human life than just give us a glimpse of the sun's atmosphere every so often. Without the moon, life as we know it on earth would be impossible.

It turns out that our moon is just the right size and distance from the earth that, in conjunction with the gravity of the sun, it causes substantial diurnal [daily] tides which mix the waters of the oceans, evening out their temperature and stirring their nutrients. With no moon, or a few smaller moons, the tides would lessen greatly in intensity, therefore reducing this mixing effect. Life would be limited to the

upper few feet of the oceans, and complex life would be hard pressed to survive.

Is Earth's Atmosphere Just for Breathing?

The book and film, *The Privileged Planet*, reveal many other earth systems as well that combine to make earth unique for life and scientific discovery.

Take a deep breath. Now exhale! No, this is not the latest Probe Ministries exercise routine. If you did what I just recommended on any other planet in the solar system, you'd be dead right now.

Our atmosphere of mostly nitrogen, oxygen, and just the right amount of water and carbon dioxide provides so much more than breathable air. We so easily take it for granted every time we breathe. Earth's closest planetary cousins, Venus and Mars, have atmospheres dominated by carbon dioxide. Venus's atmosphere is so thick you can't see through it, and it creates surface temperatures as high as 900 degrees Fahrenheit. Mars' thin carbon dioxide atmosphere contributes to such cold temperatures that carbon dioxide freezes at the poles.

Guillermo Gonzalez and Jay Richards, in their book *The Privileged Planet*, tell you more than you thought possible about the unique parameters of our atmosphere in allowing life and scientific discovery. Nitrogen, for example, is necessary for life as a critical component of the building blocks of DNA and proteins. Our atmosphere of seventy percent nitrogen also allows for a transparent atmosphere that allows light as we face the sun and dark nights that allow us to see the stars.

Oxygen, of course, is necessary for animal life, and our atmosphere contains just enough to support life and not so much as to poison life. Oxygen is also a transparent gas, keeping our atmosphere transparent for observation of our dark

night skies.

Water as well is necessary for life, but water in our atmosphere, along with nitrogen, oxygen, and carbon dioxide, creates an atmosphere that is breathable but also is the best atmosphere to transmit light in the visible spectrum. Water also creates clouds over about two thirds of the earth at any one time. Clouds help control our temperature by reflecting some of the sun's energy back out into space.

Without water in our atmosphere, we never would see a rainbow. Rainbows prompted scientists of the seventeenth century to search for an explanation of the rainbow's beauty and mystery. This search eventually resulted in understanding the solar spectrum and the effect of prisms in bending light of different wavelengths.

Carbon dioxide is life's major source of carbon, that versatile and stable element absolutely necessary for life of any kind. If earth were just five percent closer to the sun, however, we would end up much like Venus: nothing but carbon dioxide resulting in a runaway greenhouse effect and totally uninhabitable planet.

Once again, earth is shown to be just right—just right for life and just right for scientific observers. What an amazing coincidence!

More and more, scientists are coming to realize that the earth is not just some insignificant pale blue dot orbiting around an insignificant star. Our planet seems designed not just for life, but for scientific discovery as well.

So the Earth Has Oceans, Crust, Mantle, and Core. So What?

The starship Enterprise from *Star Trek* used a nifty force field deployed around the ship to protect it from oncoming

photon torpedoes. During an attack, those on the bridge were always concerned with how the “shield” was holding. There was great consternation if energy levels dipped low enough to make the shield ineffective.

Our planet earth has a similar protective shield. Earth possesses a magnetic field around it that shields us from the harmful solar wind. Our atmosphere would be slowly stripped away without our magnetic field. This magnetic shield is generated because the earth is just the right size to maintain a hot liquid iron core. The heat from this core convects through the mantle, creating plate tectonics and electricity. The electricity generates our magnetic field. But you have to have the right size planet with a molten metallic core and a crust that weakens somewhat due to chemical reactions with water so it will bend and not break. All this benefits life.

The size of earth is important for other reasons. A smaller planet would lose its atmosphere much too readily, and its interior would cool too quickly, eliminating the protective magnetic field. A more massive earth would retain too much of harmful gases such as methane. On a more massive planet, the thicker atmosphere would make breathing much more difficult.

Earth’s voluminous quantities of water are also extremely necessary for life and even for technological life. Water helps regulate our atmosphere and, of course, provides the perfect soluble medium for life. Water is perhaps the most unique molecule in the universe with its unique solvent properties coupled with the fact that ice floats instead of sinks like all other solid/liquid pairs. This unique feature means that when temperatures are cold enough for water to freeze, only the top layer freezes and life can go on below the ice. If ice sank, then all liquid water would eventually freeze and life would be extinguished in some environments every winter.

In order for earth to maintain its watery oceans it needs to

be the right distance from the sun. As noted earlier, if the earth were just five percent closer to the sun we would end up like Venus with thick hot clouds of carbon dioxide for an atmosphere. If we were just twenty percent farther away we would end up like Mars, a frozen wasteland. The heat coming from our just right liquid core also helps maintain our watery home.

All in all earth is a remarkable place for its size, distance from the sun, elemental make-up, size and closeness of the moon, presence of water, stable liquid iron core that generates a magnetic field, and so many other features. The suspicion of design and purpose quickly arises.

Has the Earth Been Designed for Multiple Purposes?

In many circles of academia, the idea that our earth is both designed for life and for scientific discovery is both surprising and resented. For years the notion that we are just an insignificant planet circling an ordinary star, otherwise known as the Copernican Principle, has dominated the physical sciences.

But discovery after discovery has altered that view, and has brought many kicking and screaming to a design perspective. Simon Conway Morris, a paleontologist from England, is quoted on the dust jacket of *The Privileged Planet* as saying:

> In a book of magnificent sweep and daring, Guillermo Gonzalez and Jay Richards drive home the argument that the old cliché of no place like home is eerily true of Earth. Not only that, but if the scientific method were to emerge anywhere, Earth is about as suitable as you can get. Gonzalez and Richards have flung down the gauntlet. Let the debate begin; it is a question that involves us all.

The book and film of the same name have been wildly successful

and controversial. At the Washington premiere I discussed earlier, scientists and legislators agreed that the thesis the authors propose is deserving of wide discussion.

A father brought his eight-year old son to a showing of the film we sponsored at Probe Ministries. I privately thought he would be too young. They had to leave before the film was done, but they purchased the DVD before they left and finished viewing it at home. As soon as Mom walked in the door, the eight-year old promptly began to explain the intricacies of solar eclipses, the size of the moon relative to the sun, and how these factors were not only a boon for life but also for scientific discovery.

The film does an excellent job of taking sometimes complex scientific concepts and communicating them in a way that most anybody can appreciate. This film deserves as wide a distribution as possible.

But because much of the scientific community remains locked in a purely naturalistic worldview, the perspective of purpose and design will continue to be resisted. However, parents and educators can readily use this excellent resource to simply investigate the facts and help to eventually gain Intelligent Design a much deserved place at the roundtable of scientific inquiry.

One other comment from the dust jacket says it well:

> Not only have Guillermo Gonzalez and Jay Richards written a book with a remarkable thesis, they have constructed their argument on an abundance of evidence and with a cautiousness of statement that make their volume even more remarkable. In my opinion, *The Privileged Planet* deserves very special attention.

Notes

1. Guillermo Gonzalez and Jay Richards, *The Privileged Planet* (Washington D.C.: Regnery Publishing, Inc., 2004).

2. June 1, 2005 entry on Discovery Institute's blog at www.evolutionnews.org/2005/06/.

© 2006 Probe Ministries

Mind, Soul, and Neuroethics

Neuroscience is the next frontier for research, and Kerby Anderson urges Christians to pay attention to these findings and provide a biblical perspective to the research and an ethical framework for its application.

Let me begin with a question. Imagine that our medical technology has advanced enough that we can transplant a human brain. If we exchanged your brain with that of another person, would you wake up in your body with someone else's thoughts and memories? Or would you wake up in the other person's body?

Or consider the following questions concerning brain research:

• Scientists are beginning to work on a "smart pill" that would increase your memory and intelligence. If such a pill existed, who should take it?

• Scientists are working to develop brain fingerprinting to reveal a person's knowledge of events. If perfected, should these brain scans be used like polygraph tests to detect if people are lying?

• Pharmaceutical companies are working to develop chemicals that block the formation of memories. If perfected, should these pills also be used to erase memories that people don't want to have?

• Areas of the brain can be stimulated or suppressed by

placing a device over the scalp. Should doctors use these devices to control your brain?

These are just a few of the questions being raised in a relatively new ethical field of discussion known as neuroethics.

In the past few years, neuroscience has been making discoveries about the human brain at an incredible rate of speed. Advances in neuroscience and imaging methods have made it possible to observe the brain more directly. And advances in neurosurgery have also made it possible to intervene more precisely and effectively.

This new arena of neuroethics is beginning to deal with the hard questions about our rapidly growing knowledge of the human brain and our ethical and social responsibilities concerning this new information. Doctors, scientists, lawyers, politicians, and theologians are all interested in neuroethics. But as you can see from the above examples, the implications of these concerns should extend to all of us since we will ultimately be affected by the moral and legal decisions concerning neuroscience.

In developing a Christian perspective on neuroethics, we should begin with a proper understanding of the mind and brain. Nearly all scientific investigation begins with the *a priori* assumption that we are material, not spiritual. Thus, scientists assume there is only a brain and not an immaterial mind. Put another way, they assume there is only a body and not a soul.

Dualism

Are we merely a brain or are we both brain and mind? This is a fundamental question in science, philosophy, and theology. New advances in science seem to be challenging the notion that we are both mind and brain.

Most Christians are Cartesian dualists in that they believe that the soul inhabits the body. The name Cartesian dualism comes from the philosopher René Descartes who four hundred years ago argued that identity and thought were distinct. He is famous for the phrase, "I think, therefore I am." In other words, the fact that he could think about himself showed that there was something distinct from him. He was doing something with his brain, but he was also distinct from his brain because he was having thoughts.

A quarter century ago, Probe Ministries published a book that showed that we are both mind and brain. The book, *The Mysterious Matter of Mind*, by Dr. Arthur C. Custance presented experimental evidence that led scientists to conclude that the mind is more than matter and more than a mere by-product of the brain.{1}

One of the most famous findings in this field involved the research of Wilder Penfield. Although he was born in the U.S., he did most of his research in Canada and was later celebrated as "the greatest living Canadian."

In 1961, Penfield reported a dramatic demonstration of the existence of a mind that is separate from the brain. He found that the mind acted independently of the brain under controlled experimental conditions. His subject was an epileptic patient who had part of the brain exposed. When Penfield used an electrode to stimulate a portion of the cortex, here is what he reported:

> *When the neurosurgeon applies an electrode to the motor area of the patient's cerebral cortex causing the opposite hand to move, and when he asks the patient why he moved the hand, the response is: "I didn't do it. You made me do it." . . . It may be said that the patient thinks of himself as having an existence separate from his body.*
>
> *Once when I warned a patient of my intention to stimulate the*

> *motor area of the cortex, and challenged him to keep his hand from moving when the electrode was applied, he seized it with the other hand and struggled to hold still. Thus, one hand, under the control of the right hemisphere driven by the electrode, and the other hand, which he controlled through the left hemisphere, were caused to struggle against each other. Behind the "brain action" of one hemisphere was the patient's mind. Behind the action of the other hemisphere was the electrode.{2}*

This experiment (and others like it) demonstrates that there is both a mind and brain. Mind is more than just merely a by product of the brain.

Neuroscience: Opportunities and Challenges

Neuroscience has been making discoveries about the human brain at an incredible rate of speed, and this provides both new opportunities and major ethical challenges. For example, existing brain imaging methods provide scientists with some very powerful tools to discover the structure and function of the human brain. These tools can detect various brain abnormalities. They can also help in the diagnosis of various neurological disorders.

Scientists have also been using these brain imaging machines to study emotions, language, and even our perceptions. It is possible that eventually these machines could even be used to read our thoughts and memories.

Scientists who have developed a brain fingerprinting machine believe they will be able to determine a person's knowledge of events. By measuring electrical activity within the brain, they can see the response of a person to certain stimuli (words, sounds, pictures). Analysis of these responses might

be helpful in various investigations.

Sometimes crime investigators use a polygraph machine to detect lies. But these devices are not completely foolproof. Scientists believe they might be able someday to develop accurate readings from functional magnetic resonance imaging (fMRI) to determine whether a person is telling the truth.

What are the implications of this? Is it possible that one day people who are suspected of a crime will be required to submit to a brain scan? Could brain scans be used to determine high-risk employees, potential criminals, even terrorists? For now, this is mere speculation, but neuroscience may force us to deal with these questions in the future.

Some have even speculated that measurements from these machines could help in distinguishing true memories from false memories. In some experiments, certain areas of the brain appear to respond differently to true memories and false memories.

Could brain scans be used to predict certain neurological disorders? Scientists using fMRI have found that people with schizophrenia have different sizes of key brain structures (e.g., larger lateral ventricles, reduced hippocampus, etc.) than those people without this mental disorder. Many of the ethical questions already surrounding the use of genetic screening would no doubt surface with the application of brain scans that would screen for neurological disorders.

A related question in this growing field of neuroethics is the use of mood altering drugs. Psychopharmacology has already provided pills to treat depression, anxiety, and even attention deficit disorder. Future development in this area will no doubt yield other mood-altering and brain-altering drugs.

In the future, it might be possible to genetically engineer drugs or even genetically engineer human beings to treat and

even cure mental disorders. This same technology might also allow scientists to increase memory and perhaps even increase intelligence. For now, the idea of a smart pill is just science fiction. But what if we develop such a medicine? Who should get the pill? Under what conditions would it be administered? These are all questions for the twenty-first century in this growing field of neuroethics.

Erasing Memories

In the film *Eternal Sunshine of the Spotless Mind*, a couple (played by Jim Carrey and Kate Winslet) undergo a brain procedure that allows them to erase each other from their memories because their relationship has turned sour. The story develops when Joel discovers that his girlfriend, Clementine, has undergone a psychiatrist's experimental procedure which removes him from her mind. Joel then decides to undergo the same procedure. In the process, however, he rekindles his love for her.

Although the film is science fiction and essentially a thought experiment, erasing memories is something scientists are pursuing right now. They are already testing a pill that, when given after a traumatic event, seems to make resulting memories less intense. The pill appears to blunt memory formation and could be very useful as a treatment. For example, this pill could be used if a person experiences a horrible event (such as a rape or witness to a murder). It would also be helpful to those who have endured an earthquake, hurricane, or tsunami.

Doctors also believe that it would help victims of post-traumatic stress disorder (PTSD). This was a problem first recognized in the Vietnam War and a disorder diagnosed in men and women who have been serving in Iraq and Afghanistan. Those affected often experience mental symptoms (flashbacks) and physical symptoms.

When a traumatic event occurs, the brain is flooded with stress hormones (such as adrenalin) that actually store these memories in different ways than the manner in which memories are normally preserved. These memories seem to be stored in our brain's hard drive, and therefore seem nearly impossible to erase.

The new pills are a class of drugs known as beta blockers which can cross the blood-brain barrier. They can actually dull the impact of the memory formation by getting to the place where stress hormones work to form these traumatic memories. Scientists believe that they can not only blunt the impact of these memories, they might even prevent PTSD. Some physicians believe it might be possible to cure PTSD by triggering these memories and then administering this new drug to eliminate them.

Not everyone is excited about the prospects of erasing memories. Already we have a variety of drugs that can alter a person's personality. Antidepressants and tranquilizers are used by millions of people every day. Antipsychotic drugs are used to treat people with such mental disorders as schizophrenia. Erasing a person's memory with certain drugs would certainly change their personality. Would that change always be for the better?

When researchers working in the area of erasing memories were asked to testify before the President's Council on Bioethics, there was deep concern. Chairman Leon Kass argued that painful memories serve a purpose and are part of the human experience.

Biblical Perspective

Advances in the field of neuroscience certainly raise new ethical dilemmas for the twenty-first century. But they also challenge the biblical understanding of human nature. Neuroscience is beginning to explain a great deal of human

behavior by mapping the human brain. Scientists are locating regions that influence personality, character, and even spirituality. Does this challenge the concept of Cartesian dualism? Can we explain mind as merely a by-product of brain?

One researcher in this field thinks the research does challenge this biblical foundation. She says you "can still believe in what Arthur Koestler called 'the ghost in the machine'." But she concludes that "as neuroscience begins to reveal the mechanisms of personality, character, and even sense of spirituality, this Cartesian line of interpretation becomes strained. If these are all features of the machine, why have a ghost at all? By raising questions like this, it seems likely that neuroscience will pose a far more fundamental challenge to religion than evolutionary biology."{3}

So if you think evolution has been a challenge to Christianity, just wait until the findings of neuroscience reach the society at large. There are large and significant issues that need to be addressed. So what is a Christian perspective on these issues of mind/brain and body/soul?

First, the Bible teaches that when the soul leaves the body, the body is dead (James 2:26). And if the soul returns to the body, the whole person comes back to life (Luke 8:55). This dual nature of the body and soul is documented in many passages of Scripture (Matt. 26:41; Rom. 8:10; 1 Cor. 5:5; 6:17, 20; 7:34; 2 Cor. 7:1; Gal. 5:17).

Second, the New Testament also talks about the resurrection of the body, and Paul elaborates on the nature of this body (1 Cor. 15:35-44). We have the most complete picture of this resurrection body by observing what the Bible tells us about Jesus Christ after His resurrection. Paul tells us this is the body we will have (Phil. 3:20-21).

This resurrection body of Jesus Christ was able to freely pass

through physical barriers (walls, locked doors). But it could also be examined for purposes of identification. It is a body that is able to communicate with the physical world (can be seen, heard, felt). Likewise, we can anticipate that our bodies will be able to share a meal and then disappear only to reappear in another location. It will also be a body that can act upon the physical world by moving objects, going for a walk, even starting a fire.

The Bible teaches that we are more than matter. We are both body and soul, mind and brain. Neuroscience is the next frontier for research, and Christians must pay attention to these findings and provide a biblical perspective to the research and an ethical framework for its application.

Notes

1. Arthur C. Custance, *The Mysterious Matter of Mind* (Grand Rapids: Zondervan/Probe, 1980).

2. Wilder Penfield, in the "Control of the Mind" Symposium, held at the University of California Medical Center, San Francisco, 1961, quoted in Arthur Koestler, *Ghost in the Machine* (London: Hutchison Publishing Group, 1967), 203-4.

3. Martha J. Farah, "Neuroethics," Op-Ed, American Medical Association, www.ama-assn.org/ama/pub/category/12727.html.

© 2006 Probe Ministries

The Continuing Controversy

over Stem Cells: A Christian View

Dr. Ray Bohlin brings a biblical worldview to this intersection of ethics and science. From a Christian perspective, is it right to harvest and destroy embryonic stem cells for the hope of possible finding a treatment for some diseases?

Different Kinds of Stem Cells

Stem cell research grew into a major issue in the 2004 election and will continue to be discussed and argued for years to come as research continues to make progress. Unfortunately, most people continue to be misinformed about the real issues in the discussion.

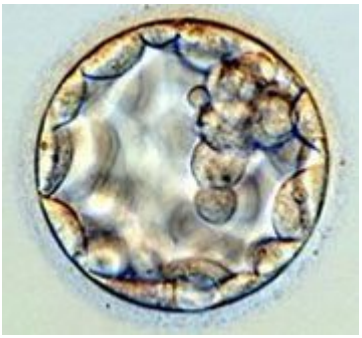
Most articles in the media fail to distinguish between the different kinds of stem cells and the different ethical questions each of them presents. Several states either already have or are working to get around federal restrictions on embryonic stem cell research in order to keep the research dollars at their state research universities.

So the controversy has far from abated. In order to think our way through this we will need some basic information. First, we need to understand some things about stem cells in general and the types of stem cells available for research.

What are stem cells? Stem cells are specialized cells that can produce several different kinds of cells in your body. Just like the stem of a plant will produce branches, leaves, and flowers, so stem cells can usually produce many different kinds of cells within a particular tissue.

There are over one trillion cells in your body. Most will only divide a few times. For instance, when you were born you

basically already had all the brain and neural cells you would need. As you grew, those cells simply got bigger. However, other tissues need a constant renewing of cells. The lining of your intestines, stomach, skin, and lungs constantly slough old cells and need replacements. Your blood cells constantly need replacing. In these kinds of tissues, specialized stem cells continually produce new cells.



There are skin, bone marrow, liver, muscle, and other types of stem cells in your body. These are referred to as *adult* stem cells. Other common types of stem cells are those found in umbilical cord blood. Even though these are fetal tissues, they are referred to as adult stem cells because they are already differentiated to a large degree. There are no ethical difficulties in using these stem cells for research and therapy.

Now, what are *embryonic* stem cells? Embryonic stem cells exist only in the earliest embryo just a few days after fertilization. This is referred to as the *blastocyst*. The blastocyst contains a small cluster of identical cells called the inner cell mass. These cells eventually form the baby and therefore can produce all the cells of the body. These are embryonic stem cells (ESC). In order to retrieve them, the embryo is destroyed.

Here then is the problem. While adult stem cells offer no ethical difficulties—but are not likely to be as versatile as embryonic stem cells—embryonic stem cells can only be obtained by destroying the embryo.

The Promise of Adult Stem Cells

What is the overall hope for stem cells? Why are they so sought after?

Essentially, it is hoped that stem cells can be used to treat and even cure diseases like diabetes, Parkinson's, Alzheimer's, and brain and spinal injuries. These are primarily degenerative diseases where certain cells no longer function as designed due to genetic defects or injuries. Generally it has been believed that embryonic stem cells offer the most hope since we know they can become any cell in the body.

But embryonic stem cells require the destruction of the embryo where adult stem cells can be harvested from the individual that needs to be treated. First, this involves only informed consent and is ethically non-controversial. Second, since the person's own cells are used, there is no chance of rejection of the cells by the patient's immune system.

In the last few years important discoveries have been made concerning certain types of adult stem cells. Essentially, we have learned that adult stem cells can switch tissues. Bone marrow stem cells seem to be the most versatile. They have been coaxed to generate new muscle, neural, lung and other tissues.

Additionally, we have learned that adult stem cells migrate throughout the body in the blood. It appears that adult stem cells are somehow informed of injury in the cell and can migrate from their source to the injury and begin at least modest repairs.

In January 2002, a group from the University of Minnesota announced what they called the ultimate adult stem cell. In creating an
immortal cell line from bone marrow stem cells, early tests showed that these stem cells could become either of the three early tissues in an embryo that eventually lead to all the cell types of the body. This showed that adult stem cells are far more versatile then previously believed.

Last year the National Institutes of Health spent $190 million on adult stem cell research and $25 million on embryonic stem cell
research. Clinical trials are already underway using bone marrow (adult) stem cells for treatment of heart attacks, liver disease, diabetes, bone and cartilage disease, and brain disorders. Adult stem cells can even be injected intravenously in large quantities, and they will migrate to where the injury is located. With such promise coming from adult stem cells it is hard to justify the use of problematic embryonic stem cells.

The Promise and Peril of Embryonic Stem Cells

Embryonic stem cells have always held the greatest promise for research and therapies because we know for certain that they can become any of the over 200 types of cells in the body. All we needed to do was learn how to control their destiny and their potential for unlimited growth.

As mentioned previously, the major ethical problem with embryonic stem cells is that the early embryo, the blastocyst, must be
destroyed in order to retrieve these cells. It is my firm conviction that this earliest embryo is human life worthy of protection. Once the nucleus from sperm and egg unite in the newly fertilized egg, a biochemical cascade begins that leads inevitably to a baby nine months later as long as the embryo is in the proper environment.

But there are other problems aside from the ethical barrier. The proper chemical signals to direct stem cells to turn into the cells you want are unknown. This is certainly the goal of research. Human embryonic stem cells have been coaxed to differentiate but since nearly all of the experimental work to date has been done with embryonic stem cells from embryos

leftover in fertility clinics there are immune rejection problems. These foreign cells are treated like they were from an organ donation.

Additionally, these cells are programmed to undergo rapid cell division. In China a man with Parkinson's was treated with human embryonic stem cells which turned into a tumor (teratoma) in his brain that killed him. The power of these cells is also a source of their peril.

In summary, embryonic stem cells possess uncertain promise. They require the death of the embryo. All therapies with any kind of stem cell are experimental and may not work. Right now, too much is being promised, and coverage in the media has been biased toward embryonic stem cells and is inaccurate.

When these difficulties and question marks are considered in the light of the exciting promise of adult stem cells, which are already producing positive results in human clinical trials, the pursuit of embryonic stem cell research is questionable at best. Just recently a major U.S. journal reported that bone marrow stem cells show great promise in treating the diseased lungs of cystic fibrosis patients.{1} CF is the most common fatal genetic disorder in the Caucasian population. Adult stem cells continue to outperform embryonic stem cells.

Stem Cells and the Last Election

The first human embryonic stem cells were isolated from embryos donated from fertility clinics in 1998. Prior to that, Congress had passed—and President Clinton had signed—legislation that prohibited the use of federal money for the destruction or use of human embryos for research purposes. This was seen as worthy even for pro-choice advocates because no one wanted to go down the road of using even the earliest human life for research purposes.

When President Bush took office in January 2001, pressure had already come from the medical research community to revise this restriction so federal grants could be used to explore this promising research avenue. Adult stem cells were still viewed as being too restricted for general research use in humans. In August 2001, President Bush issued his now famous compromise
of allowing federal funds to be used to research embryonic stem cells already isolated from human embryos, but keeping in place the restriction for using federal dollars for destroying human embryos to obtain additional cell lines.

The National Institutes of Health estimated that there were already over sixty human embryonic stem cell lines isolated around the world that would be available for research purposes. The President was criticized by pro-life advocates for allowing any federal money for research on embryonic stem cell lines, and the medical research community criticized the President for not allowing federal research money for the creation of new embryonic stem cell lines. If everybody is unhappy, it sounds like a good compromise!

The events of September 11, 2001 quickly removed this controversy from the public's attention, but the 2004 presidential election
brought it back front and center. The Bush administration, supported by the President's Council for Bioethics, continued to argue against federal money for the destruction of embryos.

The Kerry campaign seized what they saw as an opening and began claiming that they would lift the ban on stem cell research. They enlisted Ron Reagan to deliver this message at the Democratic National Convention in July, 2004. Ronald Reagan had recently passed away from Alzheimer's, and many were claiming that embryonic stem cell research could bring a cure for Alzheimer's disease.

There were several problems with this message. First,

President Bush never banned stem cell research. The Administration was funding adult stem cell research at about $190 million a year and embryonic stem cell research at about $25 million a year. Private money was always legal to use, but private investors were staying away because of the ethical problems and the
lack of progress.

Second, researchers had already testified on Capital Hill that Alzheimer's was likely not curable by treating the brain with stem cells since it was considered a whole brain disease and cell replacement would not do much good. The media just couldn't get it right.

The Distortion and the Hype of Embryonic Stem Cells

Those of us who are opposed to the use of embryonic stem cells for research are routinely accused of being hard-hearted toward those whose maladies can be addressed with stem cell research. Of course, this is not the case. We fully support adult stem cell research, but even if adult stem cells prove problematic in some cases I would still not support embryonic stem cell research when the embryo must be destroyed to obtain them.

When we think about saving lives we must count the cost. Is relieving the symptoms of disease worth the cost of the lives of the weakest and most defenseless members of society? Treating embryos with careless disregard will lead to further abuses down the road.

One of the problems with embryonic stem cells was the possibility of immune rejection. To avoid this, many want to clone the affected individual and use the embryonic stem cells from the clone. But this treats the human embryo as a thing, a clump of cells. The basis of this ethic is strictly "the end justifies the means." Even the term "therapeutic" is

problematic. The subject is destroyed.

Many try to get around the destruction of the embryo problem by claiming the blastocyst is just reproductive cells and not a person. Medical mystery writer Robin Cook gave us an example in his most recent thriller, *Seizure.*{2}. In the book a medical researcher appears before a Senate committee and says, "Blastocysts have a potential to form a viable embryo, but only if implanted in a uterus. In therapeutic cloning, they are never allowed to form embryos. . . . Embryos are not involved in therapeutic cloning."{3} Hm!

Later in the epilogue, Cook, who is an MD, says, "Senator Butler, like other opponents of stem-cell and therapeutic cloning research, suggests that the procedure requires the dismemberment of embryos. As Daniel points out to no avail, this is false. The cloned stem-cells in therapeutic cloning are harvested from the blastocyst stage well before any embryo forms. The fact is that in therapeutic cloning, an embryo is never allowed to form and nothing is ever implanted into a uterus."{4}

Cook is greatly mistaken. A 1997 embryology text states plainly that "The study of animal development has traditionally been called embryology, referring to the fact that between fertilization and birth the developing organism is known as an embryo."{5} So let's be very careful and pay attention to what is said. Some are trying to manipulate the debate by changing the "facts." We must promote the incredible success and continued promise of adult stem cells while continuing to spell out the long term peril of embryonic stem cells.

Notes

1. Wang, Guoshun, Bruce A. Bunnell, Richard G. Painter, Blesilda C. Quiniones, Nicholas A. Lanson Jr., Jeffrey L. Spees, Daniel J. Weiss, Vincent G. Valentine, Darwin J.

Prockop, “Adult stem cells from bone marrow stroma differentiate into airway epithelial cells: Potential therapy for cystic fibrosis” PNAS online, www.pnas.org (accessed December 22, 2004).

2. Robin Cook, *Seizure* (New York: Berkeley Books, 2003), 429.

3. Ibid, 32-33.

4. Ibid, 428.

5. Scott F. Gilbert, *Developmental Biology*, 5th ed. (Sunderland, Mass.: Sinauer Associates, Inc., 1997), 3. Later in the same text, Gilbert clearly equates the blastocyst and embryo when he says on page 185, “While the embryo is moving through the oviduct en route to the uterus, the blastocyst expands within the zona pellucida.” Gilbert seems to have had a change of heart between his fifth edition and the sixth. In the sixth edition of his textbook Gilbert defines embryology differently. “The study of animal development has traditionally been called embryology, from that phase of organisms that exists between fertilization and birth.” This is on page 4 of the new edition and curiously leaves the word embryo out of the definition of embryology. Perhaps Cook and Gilbert know each other!

© 2005 Probe Ministries

See Also:

- The Controversy Over Stem Cell Research [2001]
- Putting the Brakes on Human Genetic Engineering
- Stem Cells and the Controversy Over Therapeutic Cloning
- Probe Answers Our E-Mail: “Your Anti-Stem Cell Research Position Disregards Diabetics“

The Case for a Creator

It has been the popular belief for decades that science and Christianity are light years apart. However, as our knowledge of cosmology, astronomy, physics, biochemistry, and DNA has continued to grow, this supposed gap has all but disappeared. Lee Strobel, award-winning journalist and former atheist, explores these and many other compelling evidences in his latest book, *The Case for a Creator*. In this article we will discuss just a handful of these evidences, as presented in his book, and find out how science itself is steadily nailing the lid on atheisms coffin.{1} Lets begin with the argument from cosmology.

Cosmology

Cosmology is the study of the origin of the universe. In investigating this field of study, Lee Strobel interviews philosopher and theologian, Dr. William Lane Craig. Craig describes in great detail what he calls “one of the most plausible arguments for God’s existence, the Kalam cosmological argument.{2} This argument has three simple steps: Whatever begins to exist has a cause. The universe began to exist. Therefore, the universe has a cause.

Craig then explains that when he first began to defend the Kalam argument he anticipated that the first step of the argument, whatever begins to exist has a cause, would be almost universally accepted. It was the second point, the universe began to exist, which he believed would be more controversial. However, so much evidence has accumulated, Craig explained, that atheists are finding it difficult to deny that the universe had a beginning. So theyve begun to attack the first premise instead.{3}

One such attack was presented in the April 2002 issue of *Discover* magazine. In an article entitled Guths Grand Guess,

the author describes how quantum theory allows for thingsa dog, a house, a planetto be materialized out of a quantum vacuum. One professor is quoted as saying, Our universe is simply one of those things which happens from time to time.{4} Could such an audacious claim be valid?

Craig debunks this claim by making two very important points. First, These subatomic particles the article talks about are called virtual particles. They are theoretical entities and its not even clear that they actually exist as opposed to being merely theoretical constructs.{5} Secondly, however, these particles, if they are real, do not come out of nothing. The quantum vacuum is not what most people envision when they think of a vacuum that is, absolutely nothing. On the contrary, its a sea of fluctuating energy. This begs the question, So where does this energy come from? It must have a cause. So even quantum theory fails to explain the origin of the universe without a Creator. Rather, as Craig explains, the first cause of the universe is the transcendent personal Creator{6} of the Bible which states that In the beginning God created the heavens and the earth.

Anthropic Principle

What is called the *anthropic principle* essentially states that all seemingly arbitrary and unrelated constants in physics have one strange thing in common these are precisely the values you need if you want to have a universe capable of producing life.{7} To explore the particulars of this, Strobel interviews Robin Collins, who has doctorates in both physics and philosophy.

Collins, who has written several books on this subject, is asked to describe one of his favorite examples. He proceeds to illustrate the fine-tuned properties of gravity. He does so by comparing the range of possible gravitational force strengths with an old-fashioned linear radio dial that spans the entire

width of the known universe. He says,

> *Imagine that you want to move the dial from where its currently set. Even if you were to move it by only one inch, the impact on life in the universe would be catastrophic. . . .*
>
> *That small adjustment of the dial would increase gravity by a billion-fold. . . .*
>
> *Animals anywhere near the size of human beings would be crushed. . . . As astrophysicist Martin Rees said, In an imaginary strong gravity world, even insects would need thick legs to support them, and no animals could get much larger. In fact, a planet with a gravitational pull of a thousand times that of the Earth would have a diameter of only forty feet, which wouldnt be enough to sustain an ecosystem. . . .*
>
> *As you can see, compared to the total range of force strengths in nature, gravity has an incomprehensibly narrow range of life to exist.{8}*

Collins goes on to discuss several other constants which show a remarkable degree of fine-tuning such as the mass difference between neutrons and protons, electromagnetic forces, strong nuclear forces, and the cosmological constant. In fact, one expert has said that there are more than thirty separate physical or cosmological parameters that require precise calibration in order to produce a life-sustaining universe.{9}

It is this amazing degree of fine-tuning within physics which Collins believes is by far the most persuasive current argument of the existence of God.{10} The deeper we dig, Collins concludes, we see that God is more subtle and more ingenious and more creative than we ever thought possible. And I think that's the way God created the universe for usto be full of surprises."{11}

Astronomy

It had been said for years that there's nothing unusual about Earth. It's an average, unassuming rock that's spinning mindlessly around an unremarkable star in a run-of-the-mill galaxya lonely speck in the great enveloping cosmic dark, as the late Carl Sagan put it.{12} However, this is no longer thought to be the case. Even secular scientists are talking about the astounding convergence of numerous unexpected "coincidences" that make intelligent life possible on Earth, and in all likelihood, nowhere else in the universe.

In exploring these recent discoveries, Lee Strobel meets with Dr. Guillermo Gonzalez and Dr. Jay Wesley Richards, coauthors of the book *The Privileged Planet*. After hashing out a long list of unique characteristics of our own galaxy, our sun, and our planet, they then began to discuss another amazing coincidence: a whole new dimension of evidence that suggests this astounding world was created, in part, so we could have the adventure of exploring it.{13}

One of the more interesting examples given is that of a solar eclipse. Perfect solar eclipses have allowed scientists to do things such as determine specific properties of stars and confirm predictions associated with Einsteins theory of relativity. Such things would be extremely difficult to explore if it werent for total eclipses. However, such eclipses are unique to Earth within our solar system. Of the nine planets and over sixty moons, only Earth provides the optimal scenario for viewing an eclipse. This is possible because our moon, which is 400 times smaller than our Sun, happens to also be exactly 400 times closer. This allows for just the right conditions for a perfect solar eclipse.

What intrigues Gonzalez is that the very time and place where perfect solar eclipses appear in our universe also corresponds to the one time and place where there are observers to see them.{14} Richards adds, What is mysterious is that the same

conditions that give us a habitable planet also make our location so wonderful for scientific measurement and discovery. So we say there's a correlation between habitability and measurability.{15}

Indeed, this is exactly what we would expect if an all-loving, all-powerful God created the universe not only to sustain man but also, and most importantly, that man could find Him through it.

Information

In 1871, Darwin suggested in a personal letter that life may have originated spontaneously in some warm little pond, with all sorts [of chemicals] present.{16} However, in his day the immense complexity of living cells was virtually unknown. Today thats not the case. Modern science has revealed that cells are extremely complex and that this complexity is governed by the information packed structures of DNA. This raises the question, Where did this information come from?

To answer this question Strobel enlists the help of Dr. Stephen Meyer, who has degrees in physics, geology, history, and philosophy. During the course of their discussion, Meyer elaborates on various explanations as to the origin of information in the first living cell. After describing the virtual impossibility of simple random chance over time producing such information, and acknowledging the fact that virtually all origin-of-life experts have utterly rejected such an approach,{17} Strobel focuses Meyer in on a more recent attempt at an explanation, that which at times has been called *biochemical predestination*.

Meyer says the idea is that the development of life was inevitable because the amino acids in proteins and the bases, or letters, in the DNA alphabet had self-ordering capacities that accounted for the origin of the information in these

molecules.{18} He then goes on to explain why this notion just isnt true.

First, he notes that the kind of self-ordering we see in nature, such as that in salt crystals, is repetitive; a particular sequence is simply repeated over and over again. It would be like handing a person an instruction book for how to build an automobile, Meyer explains, but all the book said was the-the-the-the-the. You couldnt hope to convey all the necessary information with that one-word vocabulary.{19}

Secondly, and more importantly, he points out that science has demonstrated the complete absence of any attraction between the four letters of the DNA code themselves. So theres nothing chemically that forces them into any particular sequence, Meyer states. The sequencing has to come from outside the system.{20}

For Strobel, as well as many scientists, the conclusion is compelling: An intelligent entity has quite literally spelled out evidence of His existence through the four chemical letters in the genetic code. Its almost as if the Creator autographed every cell.{21}

Consciousness

Webster defines consciousness as the quality or state of being aware especially of something within oneself.{22} According to Darwinists, the physical world is all there is. Consciousness, therefore, is nothing more than a byproduct of the properties of chemicals. As far back as 1871, evolutionists believed that the mind is a function of matter, when that matter has attained a certain degree of organization.{23} Is this really true? Is the mind simply, as MITs Marvin Minsky put it, a computer made of meat?{24} Or is the Bible correct in its assertion that men and women are comprised of both material and immaterial components?

To address this question, Strobel interviews Dr. J. P. Moreland, who has degrees in chemistry and theology, and a Ph.D. in philosophy. One of the most compelling arguments presented by Moreland during this interview was the positive experimental evidence that consciousness and the self are more than simply a physical byproduct of the brain. For example, Moreland said, neurosurgeon Wilder Penfield electrically stimulated the brains of epilepsy patients and found he could cause them to move their arms or legs, turn their heads or eyes, talk, or swallow. Invariably the patient would respond by saying, I didn't do that. You did. According to Penfield, the patient thinks of himself as having an existence separate from his body. No matter how much Penfield probed the cerebral cortex, he said, There is no place . . . where electrical stimulation will cause a patient to [think]. Thats because [thought] originates in the conscious self, not the brain.{25}

As Strobel notes in agreement, it is evidence like this which has led one pair of scientists to conclude that physics, neuroscience, and humanistic psychology all converge on the same principle: mind is not reducible to matter. . . . The vain expectation that matter might someday account for mind . . . is like the alchemist's dream of producing gold from lead.{26}

Conclusion

It is evidences like these, as well as the many others presented by Lee Strobel, which has continued to persuade scientists in every field of study that there must be a Designer. Naturalistic explanations are not sufficient to explain the beauty, complexity, and design that we observe both around us and within us. Strobel, indeed, presents an amazingly strong case for a Creator.

Notes

1. Lee Strobel, *The Case for a Creator* (Grand Rapids, Mich.:

Zondervan, 2004) jacket.
2. Ibid., 97.
3. Ibid., 98.
4. Brad Lemley, “Guth’s Grand Guess,” *Discover* (April 2002) p. 35.
5. Strobel, 101.
6. Ibid., 110.
7. Ibid., 126.
8. Ibid., 132.
9. Ibid., 132.
10. Ibid., 130.
11. Ibid., 150.
12., Ibid., 153.
13. Ibid., 185.
14. Ibid., 186.
15. Ibid., 186.
16. Francis Darwin, *The Life and Letters of Charles Darwin* (New York: D. Appleton, 1887), 202.
17. Strobel, 229.
18. Ibid., 232.
19. Ibid., 234.
20. Ibid., 235.
21. Ibid., 244.
22. Merriam-Webster’s Collegiate Dictionary, 10th ed., s.v., “Consciousness.”
23. Thomas Huxley, “Mr. Darwin’s Critics,” *Contemporary Review* (November 1871)
24. Strobel, 250.
25. Ibid., 258.
26. Ibid., 272.

©2005 Probe Ministries

Dr. Ray Bohlin Responds to Attacks on Intelligent Design

To the editor of *Newsweek*:

Jonathan Alter must have thoroughly enjoyed writing this incredibly polemical piece, taking full advantage of every stereotype, argument from authority, straw man, and unsupported assertion his space would allow. He craftily gives credit to scientific sounding arguments against evolutionary theory while claiming they have all been discredited without mentioning the well-reasoned answers to these criticisms. As an example he cites Ken Miller's criticism of ID without mentioning that Miller himself has been respectfully answered, critiqued and refuted.

If simply rehashing the old science vs. religion argument is the best the media and the general science community can do, the battle is over. I have been making a scientific case against Darwinism and for Intelligent Design for over thirty years. As one credentialed in science, a Discovery Institute Fellow and one of the first 100 signers (now over 400) to their statement of scientific skepticism about Darwinism, I can tell you that our ranks are swelling and our case getting stronger all the time. Pieces like Alter's only show us and Newsweek's readers, the bankruptcy of the Darwinian paradigm.

Raymond G. Bohlin, Ph.D.
President, Probe Ministries

I would like to make some additional comments here.

1. Alter magically proclaims that "One of the reasons we have fewer science majors is the pernicious right-wing notion that conventional biology is vaguely atheistic." How does he know that? Of course he just states it as a bald assertion, expecting us to just believe it because he says so. His claim

might be true, but he is clearly trying to blame doubts about evolution for the U.S.'s perceived sputtering in science. Need a whipping boy? Try "right-wing fundamentalists." Some will believe that every time.

2. He says that offering ID as "an alternative to evolution in ninth-grade biology is a cruel joke." Nowhere has anybody made such a request. Even in Dover, PA, the disclaimer by the school board simply offers ID as something students might explore. It is not officially offered in the classroom as a competing theory. Discovery Institute itself maintains that ID is not ready for such treatment.

3. In the same paragraph, Alter says "ID walks like science and talks like science but, so far, performs in the lab worse than medieval alchemy." I guess that was supposed to sting. What Alter doesn't realize is that in molecular and cell biology, in particular, the language of design is everywhere in describing the workings of the incredible molecular machines inside the cell. They just claim that natural selection produced them with no real attempts to explain how. And as a mechanistic theory, evolution should be able to. So in reality, ID is used all the time in biological research, even by evolutionists, you just can't call it that if you want your work to be published.

4. Alter drags the ever present Kenneth Miller into his discussion. He mentions, parenthetically, that Miller attends Mass every week. So what? It's a double standard to allow Miller's attendance at church serve to further his credibility when my association with a Christian ministry has been used to discredit my testimony and somehow claim that my scientific reasoning is now suspect. Nobody ever mentions Miller's possible conflict of interest in his defense of evolution and criticism of ID. Kenneth Miller is coauthor of a well-known high school biology textbook that strongly promotes evolution as the grand unifying principle of biology. If evolution is dethroned, he loses money and his reputation. How come his

reasoning isn’t compromised?

5. Alter claims that science and religion are not at odds over evolution. Fine. But science is at odds with the Darwinian mechanism and there have always been doubts. As I said in my letter to the editor, the scientific case for ID only grows stronger and the debate is here to stay. Let them keep making the science vs. religion argument and the more thoughtful and reasonable among us will see through the smoke screen and will give ID a chance. That’s all we ask.

6. Alter makes it seem that the appeal to science standards and school boards is a last ditch effort when all else has failed. In reality, these are true grassroots efforts by people who have read the books and want the truth taught to their children. Many have been frustrated for years that their kids are exposed to an evolutionary filibuster in school and are encouraged that there is a growing scientific revolt in support of their concerns. The *Time* article mentions that 30% of surveyed biology teachers felt pressure to give evolution a short treatment by concerned parents. What about the greater than 50% of students (far more vulnerable to pressure than adult teachers) who have felt bullied by evolution for decades?

7. All this negative publicity is actually a good thing in the long run. As long as the silly arguments are answered, we gain new adherents with every wise-cracking, arrogant article. Why? Because reasonable people see through all the fuss eventually and realize that something funny is going on. After that they read Behe, Dembski, Meyer, Gonzalez, Richards, Nelson, Wells, Thaxton, Bradley, and other ID leaders and it all begins to come together. May our tribe increase!

See Also:

- Mere Creation: Science, Faith and Intelligent Design
- Dr. Bill Dembski's response to Steven Pinker's Assault on ID in *Time* on his blog, "Uncommon Descent"

© 2005 Probe Ministries International

Was Darwin Wrong? A Rebuttal to the November 2004 National Geographic Cover Story

Our authors examine arguments for evolution commonly brought out by evolutionists. They show these arguments are not as strong as they purport and in many instances make a stronger case for intelligent design. Every person, especially Christians, should be aware of the information presented in this article.

Over the last few decades more and more scientists from every field of discipline have voiced concerns with Darwinian evolution's ability to explain the origin and diversity of life on earth. However, you would not know that from reading a recent article in *National Geographic*. The cover of the November 2004 issue grabs the reader's attention with the question, "Was Darwin wrong?" To few people's surprise, upon turning to the first page of the article you see the boldfaced words, "NO. The evidence for Evolution is overwhelming." But how can this be when so many scientists are in disagreement? Is it possible that the five lines of evidence presented in the article aren't as indisputable as the reader is led to believe? What if each one of these evidences for evolution is

fatally flawed? What would evolution have left to stand upon? It is my opinion, as well as many others', that this is indeed the case. Let us critically evaluate each of these five lines of evidence (embryology, biogeography, morphology, paleontology, and bacterial resistance to antibiotics) and see what, if anything, we can conclude from them.

Embryology

First let's examine the so-called evidence from embryology, which Darwin himself considered to be "by far the strongest single class of facts in favor of" his theory.{1} *National Geographic* asks the question, "Why does the embryo of a mammal pass through stages resembling stages of the embryo of a reptile?"{2}This, however, is a loaded question.

This line of evidence presented by *National Geographic* is known as Embryonic Recapitulation, or in other words, as the embryo develops it passes through stages that retrace its evolutionary past. This idea was originally developed in the mid 1800's by Ernst Haeckel, which he illustrated with drawings of embryos of various species. However, as Jonathan Wells points out in his book *Icons of Evolution*, this has been known to be false for over 100 years! Not only were Haeckel's drawings fraudulent but the late Stephen J. Gould called them "the most famous fakes in biology." Furthermore, embryologist Walter Garstang also stated in 1922 that the various stages of embryo development of different species "afford not the slightest evidence" of similarities with other species supposed to be their ancestors, stating that Haeckel's proposal is "demonstrably unsound."{3}In 1894 Adam Sedgwick wrote, "A species is distinct and distinguishable from its allies from the very earliest stages all through the development."{4}

So how is *National Geographic*'s question, "Why does the embryo of a mammal pass through stages resembling stages of the embryo of a reptile?" a loaded question? Because mammalian

embryos never pass through such stages in the first place! Darwin's "strongest" evidence for evolution turns out to be no evidence at all.

Biogeography

Biogeography, as defined by *National Geographic*, "is the study of geographical distribution of living creatures—that is, which species inhabit which parts of the planet and why."{5} *National Geographic* asks, "Why should [such similar] species inhabit neighboring patches of habitat?"{6} Why are there several different species of zebras found in Africa, or dozens of species of honey creepers in Hawaii, or thirteen species of finches in the Galapagos Islands? The answer given is that "similar species occur nearby in space because they have descended from common ancestors." There is nothing controversial about that. But I don't believe that this in anyway supports the kind of evolution that *National Geographic* is trying to promote. Allow me to explain by taking a closer look at the term "evolution."

There are two different kinds of "evolution" within the biological sciences. The first kind of evolution is *macroevolution*, or, big change over time. Macroevolution requires a vast amount of new genetic information and describes the kind of evolution required to make a man out of a microbe. It is this kind of evolution that is being propagated by *National Geographic*.

The second kind of evolution is *microevolution* which describes small changes or variations within a kind. For example, you may breed a pair of dogs and get another dog which is smaller than both its parents. You may then breed the new smaller dog and get an even smaller dog. However, there are limits to this kind of change.{7} No matter how often you repeat this procedure the dog will only get so small. It is also important to note that the offspring will always be a dog. You will never get a non-dog from a dog through this kind of change.

Not to mention this kind of evolution tells us nothing about where the dog came from in the first place.

So what about *National Geographic*'s examples? They are all examples of microevolution. Why, for example, are there several species of zebras in Africa? Because they had a common ancestor that probably lived in Africa—a zebra. Or why are there thirteen species of finch on the Galapagos Islands? Because they are all descended from a single pair or group of finches. To use this kind of observation and try to explain where a zebra or finch came from in the first place goes beyond the data and the scientific method, and enters into the realm of imagination.

Evolutionists are still puzzling over the connection between these two forms of evolution, macro and micro. Perhaps the puzzle remains because macroevolution is just wishful thinking.

Morphology

Morphology is a term referring to "a branch of biology that deals with the form and structure of animals and plants."{8} It is presented by *National Geographic* as having been labeled by Darwin the "'very soul of natural history." So what is this evidence from morphology that lends itself as "proof" for microbes-to-man evolution? Simply put, it is that similarities in shape and design between different species may indicate that those species have originated from a common ancestor by way of descent with modification. *National Geographic* gives a few examples such as the "five-digit skeletal structure of the vertebrate hand," and "the paired bones of our lower legs" which are also seen "in cats and bats and porpoises and lizards and turtles."{9}

Perhaps an easier to follow illustration concerning this is evolutionist Tim Berra's famous illustration which he used in his book *Evolution and the Myth of Creationism*. In it he

states the following:

> *If you look at a 1953 Corvette and compare it to the latest model, only the most general resemblances are evident, but if you compare a 1953 and a 1954 Corvette, side by side, then a 1954 and a 1955 model, and so on, the descent with modification is overwhelmingly obvious. This is what paleontologists do with fossils, and the evidence is so solid and comprehensive that it cannot be denied by reasonable people [emphasis in original].{10}*

So why is this illustration famous? It's because Berra, although an evolutionist, unwittingly demonstrated why similar structures across different species is just as naturally attributed to intelligent design. For what do each of these various Corvette models have in common? They were all designed and manufactured by the same company, General Motors. In fact, the Corvette has many design features in common with other automobiles as well, such as four wheels, a gasoline engine, brakes, a steering wheel, etc. Why do most cars share these things, and many others things, in common? Because they are effective and efficient features designed for the proper operation of the vehicle. Maybe this is the same reason we find commonalities between many different kinds of plants and animals.

It must be granted that if evolution were true, then one would expect to see similarities between closely related species. However, as illustrated above, they could also be explained as the result of a common designer. So how can we tell which it is?

There are at least two ways. First, if similar structures did truly descend from a common ancestor, then those structures should have similar developmental pathways. In other words, they should develop in a similar manner while still in the embryonic stage. However, as early as the late 1800's

scientists observed that this simply isn't the case. Embryologist Edmund Wilson in 1894 noted that structures which appear similar between adults of different species often differ greatly either in how they form or from where they form, or both.{11}

Secondly, if similar structures are the result of descent with modification, then you would expect the development of those structures to be governed by similar genes. Concerning this very point biologist Gavin de Beer said, "This is where the worst shock of all is encountered . . . the inheritance of homologous structures from a common ancestor . . . cannot be ascribed to identity of genes."{12} In other words, different genes govern the development of similar structures which runs contrary to what evolution would predict.

It would appear then, that morphology, the "'very' soul of natural history," is more the "ghost" of natural history than supporting evidence for evolution. There are certainly many features of organisms resulting from a common ancestry, such as the beak of the Galapagos finches; but that doesn't mean that the beaks of all birds are also related by common ancestry. Perhaps applying the perspective of Intelligent Design can help clarify the difference.

Paleontology

Paleontology simply put is the study of the fossil record. So how does the fossil record support the "theory" of evolution? According to *National Geographic,* Darwin observed that species presumed to be related tend to be found in successive rock layers.{13} *National Geographic* asks if this is just coincidental. The answer provided, of course, is a firm no. Rather, they say, it is "because they are related through evolutionary descent."{14} Is this conclusion truly supported by scientific observation?

The biggest problem with identifying a gradual change from one

species into another within the fossil record is that by and large no such gradual sequence of fossils exists! With the exception of a few disputed examples, such as the horse and whale, what truly stands out in the fossil record is sudden appearance. The late Stephen J. Gould, a world renowned evolutionist, noted concerning this, "The extreme rarity of transitional forms in the fossil record persists as the trade secret of paleontology. The evolutionary trees that adorn our textbooks have data only at the tips and nodes of their branches; the rest is inference, however reasonable, not the evidence of fossils."{15} This is *especially* true within the Cambrian rock layer, dated by evolutionists at over 500 million years old, where complex species appear for the first time with no sign of gradual development from simpler forms.

To illustrate this point, imagine, if you will, that you covered the entire state of Texas with playing cards. If someone were to then go for a walk across Texas and periodically pick up a card at random, what might they begin to think if all they ever picked up were 2s and aces, and never any of the cards in between? He might begin to wonder if those other cards were there at all.

This is precisely what we find within the Cambrian rock layer. We always find fully formed species, like finding just 2s and aces, and never any intermediates, like your 3s, 4s, and so on. In fact, *National Geographic* even acknowledges this problem when it compares the fossil record in general to a film with 999 out of every 1,000 frames missing.{16} It's more likely that there are few if any missing frames; rather those frames never existed in the first place.

Darwin himself, observing the lack of transitional forms within the fossil record, noted this problem to be "perhaps the most obvious and serious objection which can be urged against [his theory of evolution]."{17} Today, with nearly 150 years of advancements in the area of paleontology, the fossil record still fails to meet the expectation of Darwin's theory.

This problem goes unaddressed by *National Geographic*.

Bacterial Resistance to Antibiotics

National Geographic derives a fifth line of evidence from more recent scientific data. They state, "These new forms of knowledge overlap one another seamlessly and intersect with the older forms, strengthening the whole edifice, contributing further to the certainty that Darwin was right."{18} Is this really the case? The most lauded of these "new forms of knowledge" is from the study of bacteria that acquire resistance to modern medicines. *National Geographic* states that "there's no better or more immediate evidence supporting the Darwinian theory than this process of forced transformation among our inimical germs."{19}

These adaptations are in fact evidence for change over time, but not the kind that would change a microbe into a man. Rather, all examples of bacterial resistance are that of micro-evolution, i.e. change *within* a kind. For example, a staph infection is caused by a bacterium known as a *Staphylococcus* or "staph" for short. Whenever a staph bacterium acquires resistance to a particular antibiotic, it still remains a staph. It doesn't change into a different kind of bacterium altogether. In fact, no matter how much it changes, it always remains a staph.

Secondly, when we take a closer look at how bacteria become resistant to a particular treatment, we find something very interesting. Just like in humans, information on how bacteria grow and survive is stored in the bacteria's DNA. Therefore, if any change is to take place to turn an organism from one kind to another "more complex" kind, such as a microbe into a man, it must add new information to that organism's DNA. However, that is not what we observe taking place in bacteria at all. New information is *never* created. Existing information may be modified, lost, or even exchanged between bacteria, but never created.

Thirdly, and perhaps most significantly, is that nothing which *National Geographic* presents even begins to explain where the information to make a bacterium came from in the first place. Rather, and to no surprise to the creationists, the study of bacterial resistance testifies to an intelligent Designer who created all living organisms with an ability to adapt to changing environments.

Conclusion

Modern science has indeed offered us great insight into the complexities of life and the inner workings of all living things. Advances in population genetics, biochemistry, molecular biology, and the human genome will surely result in greater understanding of life on our planet. But unlike what *National Geographic* suggests, it is these advances which have served to convince an increasing number of scientists to abandon Darwin's theory as an explanation for the origin of life on earth. Rather, these advancements point to the necessity of intelligent design as an added tool in the toolbox.

Notes

1. Jonathan Wells, *Icons of Evolution* (Washington, DC: Regnery Pub., 2000), 82.
2. David Quammen, "Was Darwin Wrong?," *National Geographic* November, 2004: 13.
3. Wells, 88.
4. Ibid., 97.
5. Quammen, "Was Darwin Wrong?," 9.
6. Ibid., 12.
7. Lester, Lane P., Raymond G. Bohlin, and V. Elving Anderson, *The Natural Limits to Biological Change* (Dallas: Probe Books : Distributed by Word Pub., 1989).
8. Merriam-Webster Inc., *Merriam-Webster's Collegiate Dictionary,* 10th ed. (Springfield, Mass: Merriam-Webster, 1996).

9. Quammen, “Was Darwin Wrong?,” 13.
10. Tim Berra, *Evolution and the Myth of Creationism* (Stanford, Calif.: Stanford University Press, 1990), 117.
11. Edmund B. Wilson, “The Embryological Criterion of Homology,” pp.101-124 in Biological Lectures Delivered at the Marine Biological Laboratory of Wood’s Hole in the Summer Session of 1894 (Boston: Ginn & Company, 1895), p. 107.
12. Wells, *Icons of Evolution,* 73.
13. Quammen, “Was Darwin Wrong?,” 12.
14. Ibid., 13.
15. Stephen J. Gould, “Evolution’s Erratic Pace,” *Natural History* 85(5).
16. Quammen, “Was Darwin Wrong?,” 25.
17. Charles Darwin, *On the Origin of Species by Means of Natural Selection* (New York, New York: The New American Library of World Literature, Inc., 1958), 287.
18. Quammen, “Was Darwin Wrong?,” 20.
19. Ibid., 21.

© 2005 Probe Ministries

The Impotence of Darwinism: A Christian Scientist Looks at the Evidence

Dr. Ray Bohlin looks at some of the tenets of Darwinism and finds them lacking support in the real world. Speaking from a biblical worldview perspective, he finds that the gaps and inconsistencies in current Darwinian thinking should demand that different theories be examined and evaluated.

 *This article is also available in Spanish.*

Darwinism, Design, and Illusions

Darwinian evolution has been described as a universal acid that eats through everything it touches.{1} What Daniel Dennett meant was that evolution as an idea, what he called "Darwin's dangerous idea," is an all-encompassing worldview. Darwinism forms the basis of the way many people think and act. It touches everything.



What Darwin proposed in 1859 was simply that all organisms are related by common descent. This process of descent or evolution was carried out by natural selection acting on variation found in populations. There was no guidance, no purpose, and no design in nature. The modern Neo-Darwinian variety of evolution identifies the source of variation as genetic mutation, changes in the DNA structure of organisms. Therefore, evolution is described as the common descent of all organisms by mutation and natural selection, and is assumed to be able to explain everything we see in the biological realm.

This explanatory power is what Dennett refers to as "Darwin's dangerous idea." Darwinism assumes there is no plan or purpose to life. Therefore, everything we see in the life history of an organism, including human beings, derives in some way from evolution, meaning mutation and natural selection. This includes our ways of thinking and the ways we behave. Even religion is said to have arisen as a survival mechanism to promote group unity that aids individual survival and reproduction.

Since evolution has become the cornerstone of the dominant worldview of our time—scientific naturalism—those who hold to it would be expected to take notice when somebody says it's wrong! A growing number of scientists and philosophers are saying with greater confidence that Darwinism, as a mode of

explaining all of life, is failing and failing badly. Much of the criticism can be found in the cornerstone of evolution, mutation and natural selection and the evidence for its pervasiveness in natural history. One of the biggest stumbling blocks is evolution's repudiation of any form of design or purpose in nature. Even the staunch Darwinist and evolutionary naturalist, Britain's Richard Dawkins, admits, "Biology is the study of complicated things that give the appearance of having been designed for a purpose."{2}

No one denies that biological structures and organisms look designed; the argument is over what has caused this design. Is it due to a natural process that gives the appearance of design as Dawkins believes? Or is it actually designed with true purpose woven into the true fabric of life? Darwinian evolution claims to have the explanatory power and the evidence to fully explain life's apparent design. Let's explore the evidence.

The Misuse of Artificial Selection

It is assumed by most that evolution makes possible almost unlimited biological change. However, a few simple observations will tell us that there are indeed limits to change. Certainly the ubiquitous presence of convergence suggests that biological change is not limitless since certain solutions are arrived at again and again. There appear to be only so many ways that organisms can propel themselves: through water, over land or through the air. The wings of insects, birds and bats, though not ancestrally related, all show certain design similarities. At the very least, various physical parameters constrain biological change and adaptation. So there are certainly physical constraints, but what about biological constraints?

Darwin relied heavily on his analogy to *artificial* selection as evidence of *natural* selection. Darwin became a skilled

breeder of pigeons, and he clearly recognized that just about any identifiable trait could be accentuated or diminished, whether the color scheme of feathers, length of the tail, or size of the bird itself. Darwin reasoned that natural selection could accomplish the same thing. It would just need more time.

But artificial selection has proven just the opposite. For essentially every trait, although it is usually harboring some variability, there has always been a limit. Whether the organisms or selected traits are roses, dogs, pigeons, horses, cattle, protein content in corn, or the sugar content in beets, selection is certainly possible. But all selected qualities eventually fizzle out. Chickens don't produce cylindrical eggs. We can't produce a plum the size of a pea or a grapefruit. There are limits to how far we can go. Some people grow as tall as seven feet, and some grow no taller than three; but none are over twelve feet or under two. There are limits to change.

But perhaps the most telling argument against the usefulness of artificial selection as a model for natural selection is the actual process of selection. Although Darwin called it *artificial* selection, a better term would have been *intentional* selection. The phrase "artificial selection" makes it sound simple and undirected. Yet every breeder, whether of plants or animals is always looking for something in particular. The selection process is always designed to a particular end.

If you want a dog that hunts better, you breed your best hunters hoping to accentuate the trait. If you desire roses of a particular color, you choose roses of similar color hoping to arrive at the desired shade. In other words, you plan and manipulate the process. Natural selection can do no such thing. Natural selection can only rely on what variation comes along. Trying to compare a directed to an undirected process offers no clues at all.

Most evolutionists I share this with usually object that we do have good examples of natural selection to document its reality. Let's look at a few well-known examples.

The Real Power of Natural Selection

It should have been instructive when we had to wait for the 1950s, almost 100 years after the publication of *Origin of Species*, for a documentable case of natural selection, the famous Peppered Moth (*Biston betularia*). The story begins with the observation that, before the industrial revolution, moth collections of Great Britain contained the peppered variety, a light colored but speckled moth. With the rise of industrial pollution, a dark form or melanic variety became more prevalent. As environmental controls were enacted, pollution levels decreased and the peppered variety made a strong comeback.

It seemed that as pollution increased, the lichens on trees died off and the bark became blackened. The previously camouflaged peppered variety was now conspicuous and the previously conspicuous melanic form was now camouflaged. Birds could more readily see the conspicuous variety and the two forms changed frequency depending on their surrounding conditions. This was natural selection at work.

There were always a few problems with this standard story. What did it really show? First, the melanic form was always in the population, just at very low frequencies. So we start with two varieties of the peppered moth and we still have two forms. The frequencies change but nothing new has been added to the population. Second, we really don't know the genetics of industrial melanism in these moths. We don't have a detailed explanation of how the two forms are generated. And third, in some populations, the frequencies of the two moths changed whether there was a corresponding change in the tree bark or not. The only consistent factor is pollution.{3} The

most well-known example of evolution in action reduces to a mere footnote. Regarding this change in the Peppered Moth story, evolutionary biologist Jerry Coyne lamented that "From time to time evolutionists re-examine a classic experimental study and find, to their horror, that it is flawed or downright wrong."{4}

Even Darwin's Finches from the Galapagos Islands off the coast of Ecuador tell us little of large scale evolution. The thirteen species of finches on the Galapagos show subtle variation in the size and shape of their beaks based on the primary food source of the particular species of finch. Jonathan Wiener's *Beak of the Finch*{5} nicely summarizes the decades of work by ornithologists Peter and Rosemary Grant. While the finches do show change over time in response to environmental factors (hence, natural selection), the change is reversible! The ground finches (six species) do interbreed in the wild, and the size and shape of their beaks will vary slightly depending if the year is wet or dry (varying the size seeds produced) and revert back when the conditions reverse. There is no directional change. It is even possible that the thirteen species are more like six to seven species since hybrids form so readily, especially among the ground finches, and survive quite well. Once again, where is the real evolution?

There are many other documented examples of natural selection operating in the wild. But they all show that, while limited change is possible, there are limits to change. No one as far as I know questions the reality of natural selection. The real issue is that examples such as the Peppered Moth and Darwin's Finches tell us nothing about evolution.

Mutations Do Not Produce Real Change

While most evolutionists will acknowledge that there are limits to change, they insist that natural selection is not

sufficient without a continual source of variation. In the Neo-Darwinian Synthesis, mutations of all sorts fill that role. These mutations fall into two main categories: mutations to structural genes and mutations to developmental genes. I will define structural genes as those which code for a protein which performs a maintenance, metabolic, support, or specialized function in the cell. Developmental genes influence specific tasks in embryological development, and therefore can change the morphology or actual appearance of an organism.

Most evolutionary studies have focused on mutations in structural genes. But in order for large scale changes to happen, mutations in developmental genes must be explored. Says Scott Gilbert:

> *"To study large changes in evolution, biologists needed to look for changes in the regulatory genes that make the embryo, not just in the structural genes that provide fitness within populations."*{6}

We'll come back to these developmental mutations a little later.

Most examples we have of mutations generating supposed evolutionary change involve structural genes. The most common example of these kinds of mutations producing significant evolutionary change involves microbial antibiotic resistance. Since the introduction of penicillin during World War II, the use of antibiotics has mushroomed. Much to everyone's surprise, bacteria have the uncanny ability to become resistant to these antibiotics. This has been trumpeted far and wide as real evidence that nature's struggle for existence results in genetic change—evolution.

But microbial antibiotic resistance comes in many forms that aren't so dramatic. Sometimes the genetic mutation simply allows the antibiotic to be pumped out of the cell faster than

normal or taken into the cell more slowly. Other times the antibiotic is deactivated inside the cell by a closely related enzyme already present. In other cases, the molecule inside the cell that is the target of the antibiotic is ever so slightly modified so the antibiotic no longer affects it. All of these mechanisms occur naturally and the mutations simply intensify an ability the cell already has. No new genetic information is added.{7}

In addition, genetically programmed antibiotic resistance is passed from one bacteria to another by special DNA molecules called plasmids. These are circular pieces of DNA that have only a few genes. Bacteria readily exchange plasmids as a matter of course, even across species lines. Therefore, rarely is a new mutation required when bacteria "become" resistant. They probably received the genes from another bacterium.

Most bacteria also suffer a metabolic cost to achieve antibiotic resistance. That is, they grow more slowly than wild-type bacteria, even when the antibiotic is not present. And we have never observed a bacterium changing from a single-celled organism to a multicellular form by mutation. You just get a slightly different bacterium of the same species. The great French evolutionist Pierre Paul-Grassé, when speaking about the mutations of bacteria 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."{8}*

What I have been describing so far is what is often referred to as microevolution. Evolutionists have basically assumed that the well-documented processes of microevolution eventually produce macroevolutionary changes given enough time. But this has been coming under greater scrutiny lately,

even by evolutionists. There appears to be a real discontinuity between microevolution and the kind of change necessary to turn an amoeba-like organism into a fish, even over hundreds of millions of years.

Below is just a quick sampling of comments and musings from the current literature.

> "One of the oldest problems in evolutionary biology remains largely unsolved. . . . historically, the neo-Darwinian synthesizers stressed the predominance of micromutations in evolution, whereas others noted the similarities between some dramatic mutations and evolutionary transitions to argue for macromutationism."{9}

> "A long-standing issue in evolutionary biology is whether the processes observable in extant populations and species (microevolution) are sufficient to account for the larger-scale changes evident over longer periods of life's history (macroevolution)."{10}

> "A persistent debate in evolutionary biology is one over the continuity of microevolution and macroevolution—whether macroevolutionary trends are governed by the principles of microevolution."{11}

While each of the above authors does not question evolution directly, they are questioning whether what we have been studying all these years, microevolution, has anything to do with the more important question of what leads to macroevolution. And if microevolution is not the process, then what is?

Natural Selection Does Not Produce New Body Plans

The fundamental question which needs addressing is, How have we come to have sponges, starfish, cockroaches, butterflies,

eels, frogs, woodpeckers, and humans from single cell beginnings with no design, purpose or plan? All the above listed organisms have very different body plans. A body plan simply describes how an organism is put together. So can we discover just how all these different body plans can arise by mutation and natural selection? This is a far bigger and more difficult problem than antibiotic resistance, a mere biochemical change. Now we have to consider just how morphological change comes about.

The problem of macroevolution requires developmental mutations. Simply changing a protein here and there won't do it. We somehow have to change how the organism is built. Structural genes tend to have little effect on the development of a body plan. But the genes that control development and ultimately influence the body plan tend to find their expression quite early in development. But this is a problem because the developing embryo is quite sensitive to early developmental mutations. Wallace Arthur wrote:

> "Those genes that control key early developmental processes are involved in the establishment of the basic body plan. Mutations in these genes will usually be extremely disadvantageous, and it is conceivable that they are always so."{12}

But these are the mutations needed for altering body plans. However, evolutionists for decades have been studying the wrong mutations. Those dealing with structural genes, microevolution, only deal with how organisms survive as they are, it doesn't tell us how they got to be the way they are. Optiz and Raft note that

> "The Modern Synthesis is a remarkable achievement. However, starting in the 1970's, many biologists began questioning its adequacy in explaining evolution. . . . Microevolution looks at adaptations that concern only the survival of the fittest, not the arrival of the fittest."{13}

Wallace Arthur:

> "In a developmentally explicit approach it is clear that many late changes can not accumulate to give an early one. Thus if taxonomically distant organisms differ right back to their early embryogenesis, as is often the case, the mutations involved in their evolutionary divergence did not involve the same genes as those involved in the typical speciation event."{14}

To sum up the current dilemma, significant morphological change requires early developmental mutations. But these mutations are nearly universally disadvantageous. And microevolution, despite its presence in textbooks as proof of evolution, actually tells us precious little about the evolutionary process. If these developmental mutations that can offer an actual benefit are so rare, then macroevolution would be expected to be a slow and difficult, yet bumpy process. Indeed, Darwin expected that "As natural selection acts solely by accumulating slight, successive, favorable variations, it can produce no great or sudden modifications; it can only act in short and slow steps."

The origin of body plans is wrapped up in the evidence of paleontology, the fossils and developmental biology. What does the fossil record have to say about the origin of basic body plans? When we look for fossils indicating Darwin's expected slow gradual process we are greatly disappointed. The Cambrian Explosion continues to mystify and intrigue. The Cambrian Explosion occurred around 543 million years ago according to paleontologists. In the space of just a few million years, nearly all the animal phyla make their first appearance.

> "The term 'explosion' should not be taken too literally, but in terms of evolution it is still very dramatic. What it means is rapid diversification of animal life. 'Rapid' in this case means a few million years, rather than the tens or even hundreds of millions of years that are more typical . .

.{15}

Prior to the Cambrian, (550-485 million years ago), during the Vendian (620-550 million years ago) we find fossil evidence for simple sponges, perhaps some cnidarians and the enigmatic Ediacaran assemblage. For the most part we find only single cell organisms such as bacteria, cyanobacteria, algae, and protozoan. Suddenly, in the Cambrian explosion (545-535 million years ago) we find sponges, cnidarians, platyhelminthes, ctenophores, mollusks, annelids, chordates (even a primitive fish), and echinoderms.

While many animal phyla are not present in the Cambrian, they are mostly phyla of few members and unlikely to be fossilized in these conditions. James Valentine goes further in saying that "The diversity of body plans indicated by combining all of these Early Cambrian remains is very great. Judging from the phylogenetic tree of life, all living phyla (animal) were probably present by the close of the explosion interval."{16} Later Valentine assures us that the fossil record of the explosion period is as good as or better than an average section of the geologic column.{17} So we just can't resort to the notion that the fossil record is just too incomplete.

In the Cambrian Explosion we have the first appearance of most animal body plans. This sudden appearance is without evidence of ancestry in the previous periods. This explosion of body plans requires a quantum increase of biological information. New genetic information and regulation is required.{18} Mutations at the earliest stages of embryological development are required and they must come in almost rapid fire sequence. Some have suggested that perhaps the genetic regulation of body plans was just more flexible, making for more experimentation. But we find some of the same organisms in the strata from China to Canada and throughout the period of the explosion. These organisms do not show evidence of greater flexibility of form.

The type of mutation is definitely a problem, but so is the rate of mutation. Susumo Ohno points out that "it still takes 10 million years to undergo 1% change in DNA base sequences. . . . [The] emergence of nearly all the extant phyla of the Kingdom Animalia within the time span of 6-10 million years can't possibly be explained by mutational divergence of individual gene functions."{19}

Darwinism would also require early similarities between organisms with slow diversification. Phyla should only become recognizable after perhaps hundreds of millions of years of descent with modification. Yet the great diversity appears first with gradual drifting afterward, the opposite of what evolution would predict. Again some suggest that the genetic structure of early organisms was less constrained today, allowing early developmental mutations with less severe results. But there would still be some developmental trajectory that would exist so the selective advantage of the mutation would have to outweigh the disruption of an already established developmental pathway.

But each of these speculations is unobservable and untestable. It's quite possible that developmental constraints may be even more rigid with fewer genes. But even if the constraints were weaker, then there should be more variability in morphology of species over space and time. But as I said earlier, the Cambrian fauna are easily recognizable from the early Cambrian deposits in China and Greenland to the middle Cambrian deposits of the Burgess Shale. There is no testable or observational basis for hypothesizing less stringent developmental constraints.

This stunning burst of body plans in the early Cambrian and the lack of significant new body plans since the Cambrian indicate a limit to change. Evolutionary developmental biologist Rudolf Raff told *Time* magazine over ten years ago that "There must be limits to change. After all, we've had these same old body plans for half a billion years."{20}

Indeed, perhaps these limits to change are far more pervasive and genetically determined than Raff even suspects.

Along the way, functional organisms must form the intermediate forms. But even the functionality of these intermediate organisms transforming from one body plan to another has long puzzled even the most dedicated evolutionists. S. J. Gould, the late Harvard paleontologist, asked,

> "But how can a series of reasonable intermediates be constructed? . . . The dung-mimicking insect is well protected, but can there be any edge in looking only 5 percent like a turd?"{21}

With his usual flair, Gould asks a penetrating question. Most have no problem with natural selection taking a nearly completed design and making it just a little bit more effective. Where the trouble really starts is trying to create a whole new design from old parts. Evolution has still not answered this critical question. I fully believe that evolution is incapable of answering this question with anything more than "I think it can." However, unlike the little train that could, it will take far more than willpower to come up with the evidence.

In this brief discussion I haven't even mentioned the challenges of Michael Behe's irreducible complexity,{22} William Dembski's specified complexity,{23} and a host of other evolutionary problems and difficulties. This truly is a theory in crisis.

Notes

1. Daniel Dennett, *Darwin's Dangerous Idea* (New York: Simon and Schuster, 1999).
2. R. Dawkins, *The Blind Watchmaker* (W. W. Norton, 1986), 1.
3. Jonathan Wells, *Icons of Evolution* (Washington, DC: Regnery Publishing, Inc, 2000), 137-157.
4. Jerry Coyne, "Not black and white," *Nature* 396 (1998):

35-36.
5. Jonathan Weiner, *The Beak of the Finch* (New York: Alfred A. Knopf, 1994).
6. Scott F. Gilbert, “Opening Darwin’s black box: teaching evolution through developmental genetics,” *Nature Reviews Genetics* 4 (2003): 735-741.
7. Lane Lester and Raymond G. Bohlin, *The Natural Limits to Biological Change* (Richardson Tex.: Probe Books, 1984, 1989), 103,170.
8. Pierre-Paul Grassé, *Evolution of Living Organisms* (New York: Academic Press, 1977), 87.
9. David L. Stern, “Perspective: evolutionary developmental biology and the problem of variation,” *Evolution* 54 (2000): 1079-1091.
10. Sean B. Carroll, “The big picture,” *Nature* 409 (2001): 669.
11. Andrew M. Simons, “The continuity of microevolution and macroevolution,” *Journal of Evolutionary Biology* 15 (2002): 688-701.
12. Wallace Arthur, *The Origin of Animal Body Plans* (Cambridge: Cambridge University Press, 1997), 14.
13. S. Gilbert, J. Optiz, and R. Raff, “Review—Resynthesizing Evolutionary and Developmental Biology,” *Developmental Biology* 173 (1996): 361.
14. Wallace Arthur, *The Origin of Animal Body Plans,* 22.
15. S. Conway Morris, *Crucible of Creation* (Oxford: Oxford University Press, 1998), 31.
16. James Valentine, *On the Origin of Phyla* (Chicago: University of Chicago Press, 2004), 183.
17. Ibid., p. 194.
18. Stephen C. Meyer, “The origin of biological information and the higher taxonomic categories,” *Proceedings of the Biological Society of Washington* 117 (2), (2004):213-239.
19. Susumo Ohno, “The notion of the Cambrian pananimalia genome,” *PNAS USA* 93 (1996): 8475-78.
20. Rudolf Raff, quoted in “Then Life Exploded,” by J. Madeleine Nash, *Time*, Dec. 4, 1995, p. 74.

21. S. J. Gould, *Ever Since Darwin,* 1977, 104.
22. Michael Behe, *Darwin's Black Box: The Biochemical Challenge to Evolution* (New York: Free Press, 1996).
23. William A. Dembski, *No Free Lunch: Why Specified Complexity Cannot Be Purchased without Intelligence,* (Lanham, Maryland: Roman and Littlefield, 2002).

© 2005 Probe Ministries

Christian Environmentalism – A Biblical Worldview Perspective on You and the Earth

Dr. Bohlin applies a biblical point of view in determining a concerned Christian relationship to environmentalism. As Christians, we know we have been made stewards of this earth, having a responsibility to care for it. Understanding our relationship to God and to the rest of creation gives us the right perspective to apply to this task.

This article is also available in Spanish. 

Is There an Environmental Problem?



The news media are full of stories concerning environmental disasters of one kind or another, from global warming to endangered species to destruction of the rain forests to nuclear accidents. Some are real and some are imaginary, but it's not hard to notice that the environmental issue

receives very little attention in Christian circles. There are so many other significant issues that occupy our attention that we seem to think of the environment as somebody else's issue. Many Christians are openly skeptical of the reality of any environmental crisis. It's viewed as a liberal issue, or New Age propaganda, or just plain unimportant since this earth will be destroyed after the millennium. What we fail to realize is that Christians have a sacred responsibility to the earth and the creatures within it. The earth is being affected by humans in an unprecedented manner, and we do not know what the short or long term effects will be.

Calvin DeWitt, in his book *The Environment and the Christian*,{1} lists seven degradations of the earth. First, land is being converted from wilderness to agricultural use and from agricultural use to urban areas at an ever-increasing rate. Some of these lands cannot be reclaimed at all, at least not in the near future.

Second, as many as three species a day become extinct. Even if this figure is exaggerated, we still need to realize that once a species has disappeared, it is gone. Neither the species nor the role it occupied in the ecosystem can be retrieved.

Third, land continues to be degraded by the use of pesticides, herbicides, and fertilizers. While many farmers are rebelling against this trend and growing their produce organically or without chemicals, the most profitable and largest growers still use an abundance of chemicals.

Fourth, the treatment of hazardous chemicals and wastes continues as an unsolved problem. Storing of medium term nuclear wastes is still largely an unsolved problem.

Fifth, pollution is rapidly becoming a global problem. Human garbage turns up on the shores of uninhabited South Pacific islands, far from the shipping lanes.

Sixth, our atmosphere appears to be changing. Is it warming

due to the increase of gases like carbon dioxide from the burning of fossil fuels? Is the ozone layer shrinking due to the use of chemicals contained in refrigerators, air conditioners, spray cans, and fire extinguishers? While I remain skeptical of the global threat that many see, pollution continues to be a local and regional concern prompting ever more stringent emission controls for our automobiles.

Seventh, we are losing the experiences of cultures that have lived in harmony with the creation for hundreds or even thousands of years. Cultures such as the Mennonites and Amish, as well as those of the rain forests, are crowded out by the expansion of civilization.

Never before have human beings wielded so much power over God's creation. How should we as Christians think about these problems?

The Environmental Ethics of Naturalism and Pantheism

Some people have blamed Western culture's Judeo-Christian heritage for the environmental crisis. These critics point squarely at Genesis 1:26-28, where God commands His new creation, man, to have dominion over the earth and to rule and subdue it.{2} This mandate is seen as a clear license to exploit the earth for man's own purposes. With this kind of philosophy, they ask, how can the earth ever be saved? While I will deal with the inaccuracy of this interpretation a little later, you can see why many of the leaders in the environmental movement are calling for a radical shift away from this Christian position. But what are the alternatives?

The need to survive provides a rationale for environmental concern within an *evolutionary* or *naturalistic* world view. Survival of the human species is the ultimate value. Man cannot continue to survive without a healthy planet. We must act to preserve the earth in order to assure the future of our

children.

The evolutionary or naturalistic view of nature is, however, ultimately pragmatic. That is, nature has value only as long as we need it. The value of nature is contingent on the whim of egotistical man.{3} If, as technology increases, we are able to artificially reproduce portions of the ecosystem for our survival needs, then certain aspects of nature lose their significance. We no longer need them to survive. This view is ultimately destructive, because man will possess only that which he needs. The rest of nature can be discarded.

In the fictional universe of *Star Trek*, vacations are spent in a computer generated virtual reality and meals are produced by molecular manipulation. No gardens, herds, or parks are needed. What value does nature have then?

Another alternative is the *pantheistic* or *New Age* worldview. Superficially, this view offers some hope. All of nature is equal because all is god and god is all. Nature is respected and valued because it is part of the essence of god. If humans have value, then nature has value.

But while pantheism elevates nature, it simultaneously degrades man and will ultimately degrade nature as well. To the pantheist, man has no more value than a blade of grass. In India the rats and cows consume needed grain and spread disease with the blessings of the pantheists. To restrict the rats and cows would be to restrict god, so man takes second place to the rats and cows. Man is a part of nature, yet it is man that is being restricted. So ultimately, all of nature is degraded.{4}

Pantheism claims that what is, is right. To clean up the environment would mean eliminating the undesirable elements. But, since god is all and in all, how can there be any undesirable elements? Pantheism fails because it makes no distinctions between man and nature.

The Christian Environmental Ethic

A true Christian environmental ethic differs from the naturalistic and pantheistic ethics in that it is based on the reality of God as Creator and man as his image-bearer and steward. God is the Creator of nature, not part of nature. He transcends nature (Gen. 1-2; Job 38-41; Ps. 19, 24, 104; Rom 1:18-20; Col. 1:16-17). All of nature, including man, is equal in its origin. Nature has value in and of itself because God created it. Nature's value is intrinsic; it will not change because the fact of its creation will not change.{5} The rock, the tree, and the cat deserve our respect because God made them to be as they are.{6}

While man is a creature and therefore is identified with the other creatures, he is also created in God's image. It is this image that separates humans from the rest of creation (Gen. 1:26-27; Ps. 139:13-16).{7} God did not bestow His image anywhere else in nature.

Therefore, while a cat has value because God created it, it is inappropriate to romanticize the cat as though it had human emotions. All God's creatures glorify Him by their very existence, but only one is able to worship and serve Him by an act of the will.

But a responsibility goes along with bearing the image of God. In its proper sense, man's rule and dominion over the earth is that of a steward or a caretaker, not a reckless exploiter. Man is not sovereign over the lower orders of creation. Ownership is in the hands of the Lord.{8}

God told Adam and Eve to cultivate and keep the garden (Gen. 2:15), and we may certainly use nature for our benefit, but we may only use it as God intends. An effective steward understands that which he oversees, and science can help us discover the intricacies of nature.

Technology puts the creation to man's use, but unnecessary waste and pollution degrades it and spoils the creation's ability to give glory to its Creator. I think it is helpful to realize that we are to exercise dominion over nature, not as though we are entitled to exploit it, but as something borrowed or held in trust.

Recall that in the parable of the talents in Matthew 25, the steward who merely buried his talent out of fear of losing it was severely chastised. What little he did have was taken away and given to those who already had a great deal.{9} When Christ returns, His earth may well be handed back to Him rusted, corroded, polluted, and ugly. To what degree will you or I be held responsible?

This more thoroughly biblical view of nature and the environment will allow us to see more clearly the challenges that lie ahead. Our stewardship of the earth must grapple with the reality that it does not belong to us but to God though we have been given permission to use the earth for our basic needs.

Abuse of Dominion

While God intended us to live in harmony with nature, we have more often than not been at odds with nature. This reality tells us that man has not fulfilled his mandate. The source of our ecological crisis lies in man's fallen nature and the abuse of his dominion.

Man is a rebel who has set himself at the center of the universe. He has exploited created things as though they were nothing in themselves and as though he has an autonomous right to do so.{10} Man's abuse of his dominion becomes clear when we look at the value we place on time and money. Our often uncontrolled greed and haste have led to the deterioration of the environment.{11} We evaluate projects almost exclusively in terms of their potential impact on humans.

For instance, builders know that it is faster and more cost effective to bulldoze trees that are growing on the site of a proposed subdivision than it is to build the houses around them. Even if the uprooted trees are replaced with saplings once the houses are constructed, the loss of the mature trees enhances erosion, eliminates a means of absorbing pollutants, producing oxygen, and providing shade, and produces a scar that heals slowly if at all.

Building around the trees, while more expensive and time-consuming, minimizes the destructive impact of human society on God's earth. But, because of man's sinful heart, the first option has been utilized more often than not.

As Christians we must treat nature as having value in itself, and we must be careful to exercise dominion without being destructive.{12} To quote Francis Schaeffer, We have the right to rid our house of ants; but what we have no right to do is to forget to honor the ant as God made it, out in the place where God made the ant to be. When we meet the ant on the sidewalk, we step over him. He is a creature, like ourselves; not made in the image of God, it is true, but equal with man as far as creation is concerned.{13}

The Bible contains numerous examples of the care with which we are expected to treat the environment. Leviticus 25:1-12 speaks of the care Israel was to have for the land. Deuteronomy 25:4 and 22:6 indicates the proper care for domestic animals and a respect for wildlife. In Isaiah 5:8-10 the Lord judges those who have misused the land. Job 38:25-28 and Psalm 104:27-30 speak of God's nurture and care for His creation. Psalm 104 tells us that certain places were made with certain animals in mind. This would make our national parks and wilderness preserves a biblical concept. And Jesus spoke on two occasions of how much the Father cared for even the smallest sparrow (Matt. 6:26, 10:29). How can we do less?

Christian Responsibility

I believe that as Christians we have a responsibility to the earth that exceeds that of unredeemed people. We are the only ones who are rightly related to the Creator. We should be showing others the way to environmental responsibility.

Christians, of all people, should not be destroyers, Schaeffer said.{14} We may cut down a tree to build a house or to make a fire, but not just to cut it down. While there is nothing wrong with profit in the marketplace, in some cases we must voluntarily limit our profit in order to protect the environment.{15}

When the church puts belief into practice, our humanity and sense of beauty are restored.{16} But this is not what we see. Concern for the environment is not on the front burner of most evangelical Christians. The church has failed in its mission of steward of the earth.

We have spoken out loudly against the materialism of science as expressed in the issues of abortion, human dignity, evolution, and genetic engineering, but have shown ourselves to be little more than materialists in our technological orientation towards nature.{17} All too often Christians have adopted a mindset similar to a naturalist that would assert that simply more technology will answer our problems. In this respect we have essentially abandoned this very Christian issue.

By failing to fulfill our responsibilities to the earth, we are also losing a great evangelistic opportunity. Many young people in our society are seeking an improved environment, yet they think that most Christians don’t care about ecological issues and that most churches offer no opportunity for involvement.{18} For example, in many churches today you can find soft drink machines dispensing aluminum cans with no receptacle provided to recycle the aluminum, one of our most

profitable recyclable materials.

As a result, other worldviews and religions have made the environmental issue their own. Because the environmental movement has been co-opted by those involved in the New Age Movement particularly, many Christians have begun to confuse interest in the environment with interest in pantheism and have hesitated to get involved. But we cannot allow the enemy to take over leadership in an area that is rightfully ours.

As the redeemed of the earth, our motivation to care for the land is even higher than that of the evolutionist, the Buddhist, or the advocate of the New Age. Jesus has redeemed all of the effects of the curse, including our relationship with God, our relationship with other people, and our relationship with the creation (1 Cor. 15:21-22, Rom. 5:12-21). Although the heavens and the earth will eventually be destroyed, we should still work for healing now.

For Further Reading

Beisner, E. Calvin. *Prospects for Growth: a Biblical View of Population, Resources, and the Future*. Westchester, Ill.: Crossway Books, 1990.

DeWitt, Calvin B., Ed. *The Environment and the Christian: What Can We Learn from the New Testament?* Grand Rapids , Mich.: Baker Book House, 1991.

Schaeffer, Francis. *Pollution and the Death of Man: a Christian View of Ecology.* Wheaton, Ill.: Tyndale, 1970.

Notes

1. Calvin DeWitt, ed., *The Environment and the Christian: What Does the New Testament Say About the Environment* (Grand Rapids: Baker, 1991).
2. Lynn White, “The Historical Roots of Our Ecologic Crisis,” *Science*, 155 (1967):1203-07.

3. Francis Schaeffer, *Pollution and the Death of Man: The Christian View of Ecology* (Wheaton, Ill.: Tyndale House Publishers, 1970), 26-27.
4. Ibid, 30-33.
5. Ibid, 47-49.
6. Ibid, 54-55.
7. Ibid, 49-50.
8. Ibid, 69.
9. Ibid, 69-70.
10. Ibid, 71.
11. Ibid, 83.
12. Ibid, 74-75.
13. Ibid, 74.
14. Ibid, 74.
15. Ibid, 90-91.
16. Ibid, 92-93.
17. Ibid, 85.
18. Ibid, 85.

© 2005 Probe Ministries

Stem Cell Commentary: Spinning the Terms



Part of the struggle in the stem cell debate is the definition of terms. The media regularly uses the term *embryo* to refer to what is necessarily destroyed to obtain embryonic stem cells. The more specific term is *blastocyst*. The blastocyst (see picture) forms after about 5-7 days following fertilization and ends at about 14 days when further differentiation begins.

Medical thriller author Robin Cook in his latest book, *Seizure*, has one of his characters, a medical researcher Dr. Daniel Lowell, testify before Congress that "Blastocysts have a potential to form a viable embryo, but only if implanted in a uterus. In therapeutic cloning, they are never allowed to form embryos… Embryos are not involved in therapeutic cloning." (p. 32) The clear implication is that blastocysts are not embryos. This sounds extremely disingenuous to me.

Cook further clarifies his personal opinion in the epilogue where he states, "Senator Butler [a predictably hypocritical, pompous pro-life senator—my comment], like other opponents of stem-cell and therapeutic cloning research, suggests that the procedure requires the dismemberment of embryos. As Daniel points out to no avail, this is false. The cloned stem-cells in therapeutic cloning are harvested from the blastocyst stage well before any embryo forms. The fact is that in therapeutic cloning, an embryo is never allowed to form and nothing is ever implanted into a uterus." (p. 428) So if there are no embryos, there are no humans and there is no ethical debate. Cook is playing a semantic game. The character Daniel in the

novel admits as much but says it is important semantics.

So I checked Scott Gilbert's fifth edition of *Developmental Biology* (Sinauer Assoc. Inc.), 1997. On page three Gilbert says, "The study of animal development has traditionally been called embryology, referring to the fact that between fertilization and birth the developing organism is known as an embryo." By this definition, Cook is far off base as I suspected.

But then I checked to see if Gilbert had a newer edition. Sure enough, I found one on Amazon.com. The year is not stated but I suspect it is at least 2002-2003. Not surprisingly, I suppose, the same definition of embryology is stated differently (some pages are available for viewing): "The study of animal development has traditionally been called embryology, from that phase of organisms that exists between fertilization and birth." (p. 4) Note that the word "embryo" is omitted this time, yet the word "embryology" clearly means the study of embryos. So Gilbert tries to backpedal from the word embryo yet inadvertently defines embryo anyway by simply trying to define embryology at all. I wonder if Gilbert and Cook know each other. <smile> Note also that human embryonic stem cells were first harvested successfully from embryos left over in fertility clinics by researchers from the University of Wisconsin in 1998, one year after Gilbert's 5th edition.

Even biologists are now learning how to manipulate the language to define things however it suits them politically.

© 2004 Probe Ministries

The Controversy over Evolution in Biology Textbooks

Texas, Textbooks and Evolution

Public school textbooks are big business in Texas. Texas is the second largest purchaser of textbooks behind California. Texas also employs an extensive review process which involves input from the public. Independent school districts in the state of Texas can purchase whatever textbooks they prefer. But if they want state assistance in the purchase of textbooks, they'd better pick those texts that are recommended by the State Board of Education.

Publishers know that whatever books Texas approves, other states will adopt as well. Therefore the decisions by the Texas State Board of Education regarding textbooks influence what many students across the country will be reading over the next few years. Publishers pay very close attention to what goes on in Texas.

Evolution has been a contentious issue before the State Board for decades. A few years ago, they passed a resolution that said textbooks were to be free from factual errors and that the information in the texts should allow students to "analyze, review, and critique scientific explanations, including scientific hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information."

This certainly sounds scientific and fair. I mean, who doesn't want both sides of scientific controversies presented? Any "scientist to be" needs to be able to analyze, review, and critique scientific explanations. Scientists rarely want to

just take someone’s word for something. Scientists tend to be skeptical in nature. That’s a good thing. Students ought to be encouraged and trained to think this way.

That is, they ought to be trained to think this way about everything in science, except evolution. Evolution has become the unassailable myth of modern science. No dissension allowed. No controversies accepted. No challenges tolerated. Evolution is a fact and anybody who doesn’t think so is ignorant, dishonest, or religiously motivated.

But for some reason, skepticism about evolution and Darwinian evolution in particular just won’t go away. The dissenters are also growing in number and levels of education. So when the Texas State Board of Education announced its two public hearings in the summer of 2003, the battle lines were clearly drawn. Skeptics of Darwinism came loaded with careful examinations of the textbooks up for adoption, pointing out inaccuracies, falsehoods, and skimmed-over controversies. No one came to include creation or intelligent design into the textbooks.

Defenders of evolution came loaded with little else besides crude attempts to discredit their critics and scary words of warning about attempts to get religion into the science textbooks.

What’s Wrong with the Textbooks As They Are?

If you have occasion to pick up a high school biology textbook, you quickly realize that the process of writing it must be a daunting task. The amount of detailed information they contain today over a wide range of biological phenomena is truly staggering.

The reality that they contain errors or out of date material can be easily understood. You would think that authors and

publishers would welcome those who spot these problem areas and take the time and effort to point them out. For the most part this is indeed the case. Except when the errors concern the presentation of evolutionary theory. Pointing out factual errors, exaggerated claims or poor logic in the presentation of evolution suddenly becomes suspect. One's motives should be questioned. Evolution is a fact, after all, and surely no one thinks that evolution as presented in textbooks should be altered in any way.

I'm being facetious, of course. Evolution should be open to scrutiny as much as any other area of biology, but it isn't. Some mistakes in biology textbooks have persisted for decades, despite efforts to point them out and seek their removal or correction.

A classic example involves the Miller-Urey experiment. In 1953, Harold Urey and Stanley Miller published the results of an experiment that was meant to simulate the production of biochemicals necessary for life from gasses that were thought to be in earth's early atmosphere. Among a host of meaningless organic compounds, Miller and Urey found a few amino acids, the building blocks of proteins.

The experiment caused quite a sensation and launched the origin of life field with a bang. Over the years, however, numerous problems showed up that invalidated the experiment. Chief among these problems was the determination that the atmosphere they used—ammonia, methane, water vapor, and hydrogen gasses—did not represent the early atmosphere. These hydrogen rich gasses were replaced with carbon dioxide, carbon monoxide, nitrogen, and water vapor. When these gasses are used, the experiment is a dismal failure. Trace amounts of the simplest amino acid, glycine, sometimes appears, but not enough to get excited about.

All this has been known since the late 70s. But over thirty years later, textbooks represent the Miller/Urey experiment as

if it still represents a realistic simulation. Why? Because it's the only experiment that works. And there needs to be a naturalistic story of where life could have come from.

Other problems remain in the infamous and fraudulent embryo drawings of Ernst Haeckel, the newly discovered problems with the peppered moth story, the startling evolutionary problem of the Cambrian explosion, and many others. Some of evolutionists' most cherished examples of evolutionary principles have fallen on hard times.

A Public Hearing in Texas in July 2003

The Texas State Board of Education is a powerful group of people. Every six years they evaluate textbooks for use in the Texas public schools, and many private schools and public schools from other states follow their lead. Part of the reason for this is the extensive review process the board employs.

Not only do the fifteen elected Board members review the texts, but a committee of educators from the Texas Education Agency also reviews them, and the public is invited to state its opinions as well. The Board reviews textbooks every year but they cycle through several categories every six years. The year 2003 was the year for biology textbooks.

I attended the first public hearing on July 9th in Austin, Texas. Citizens of Texas who wish to testify need to sign up about two weeks prior to the hearing. Each testifier is allotted three minutes, which is closely timed, and then a few board members may ask a few questions.

Three minutes isn't very long. It's about the length of one of our daily radio programs. So whatever you need to say, you'd better say it concisely and quickly. I briefly presented my scientific credentials and addressed problems with the Miller-Urey experiment, the Cambrian explosion, and the

mutation/natural selection mechanism of evolution.

I kept my remarks strictly along factual lines and discussed the evidence, with no mention of a Creator or Intelligent Design. But before the meeting even started I knew I was in for a long afternoon. At noon, one hour before the meeting, a group from The National Center for Science Education (NCSE) gave a press conference warning the media to expect another attempt from pseudo-scientists to try to include creationism into the textbooks.

Actually of the forty or so people signed-up to testify, only three of us were there to criticize evolution and no one was there to argue for creation. In the minutes before the meeting there was suddenly a horde of media looking for me and asking for interviews. Thanks to the NCSE I was provided with opportunities for nearly a dozen interviews, mostly TV. I was able to explain our side of the story and correct the NCSE's distorted paranoia.

The defenders of evolution came to say that evolution ought to be left alone: don't cave in to the pressure! But who was exerting the pressure? There were only three of us and over thirty of them. We came with scientific criticisms. They offered little else besides blatant misrepresentations and character assassinations.{1} These testimonies primarily set the stage for the September hearing.

A Second Public Hearing in September 2003

A major player in the entire hearing process was the Discovery Institute (www.discovery.org), a public policy institute out of Seattle, Washington. Discovery sponsors a Center for Science and Culture that provides limited funding for skeptics of Darwinism and proponents of Intelligent Design. I have received two limited fellowships from Discovery to help write a new edition of my book with Lane Lester, *The Natural Limits to Biological Change.* It was Discovery that contacted me about

possibly testifying at the July 9th hearing.

Because of the intense media coverage of that hearing, the folks at Discovery spent a great deal of time addressing the media, correcting their errors and explaining the real story. As the September 10th hearing approached, Discovery sent out press releases and sent a team to Texas to hold press conferences and potentially testify before the State Board of Education.

Because of all the media attention, that ranks of testifiers swelled to unmanageable portions. Over 150 people signed up to testify and they all expected their three minutes. You do the math! This was going to be a long meeting. Most of those associated with the Discovery Institute and a Texas-based organization, Texans for Better Science Education (www.strengthsandweaknesses.org), gained the early testimony slots when the board members were most alert. The meeting dragged on until 1 a.m., a full twelve hours.

Once again, those of us criticizing the textbooks came prepared with specific criticisms of the textbooks and the other side simply wanted to say that we had no place at the table of discussion and should be ignored because we are pseudo-scientists and religious fundamentalists.

Most distressing of all was a pastor from a large Southern Baptist Church in Austin who came to tell the Board that evolution was of science and creation was of Genesis and faith and that the two had nothing to do with each other. He went on to add that he and everyone else knew that the dissenters from evolution were only there to protect their religious beliefs. He received a thunderous round of applause from the theistic evolutionists, agnostics and a theists in the crowd.

How sad that this brother in Christ was so deceived and even pretended to know why I was really there, having never spoken to me, nor had we even ever met. This broke my heart, as did

other pastors who came to help but only showed their lack of knowledge about evolution and ended up hurting more than they helped.

While many evolutionists embarrassed themselves by exhibiting a childish paranoia, so did many Christians who just really didn't understand the issues. I'd love to do a Probe Ministries Mind Games Conference in all these churches—they need it.

Was Anything Accomplished?

There was heavy media interest from July through early November when the Texas State Board of Education made their final decision. Special interests from both evolutionists and those dissenting from evolution were involved.

Those who wanted to strictly follow Texas guidelines to teach evolution, but remove factual errors and include both strengths and weaknesses of evolution hoped to vote on each textbook individually. But the more liberal majority decided to vote on adopting the Texas Education Agency's recommendation to approve all eleven textbooks. This motion passed by a vote of 11-4. Only two textbooks had made sufficient changes to be judged "conforming."{2} The other nine would have been judged "non-conforming," which would have still made them eligible to be purchased with state funds. Only a book judged "rejected" would not be purchased by the state.

This was a small setback. But some significant changes were made. The fraudulent Haeckel drawings of vertebrate embryos, suggesting far more evidence for evolution than actually exists, have been virtually removed entirely. The fraud has been known for over 100 years. Two textbooks (Holt and Glencoe) have now inserted acknowledgments that the Miller-Urey origin of life experiment was based on ideas about the earth's early atmosphere no longer accepted by scientists.

Another textbook has qualified an earlier claim made about evolutionary intermediates. The original textbook claimed that "since Darwin's time, many of these intermediates have been found." The revised text now reads: "Since Darwin's time, some of these intermediates have been found, while others have not." {3}

The journal *Science* matter-of-factly reported, "In response, some textbook publishers made minor changes, including replacing embryo drawings with photos and dropping the term 'gill slits.' One also eliminated the assertion that Darwin's theory is the 'essence of biology.'"{4}

While many of these changes are small, the public perception of the debate seems to be changing as evidenced by this statement from a *Dallas Morning News* editorial from November 5th:

> *"This ought to be easy; science is supposed to deal solely in facts. But the teaching of evolution is so entangled with politics that warring factions can't even agree on the facts. (What did the flawed Miller-Urey "origin of life" experiment prove, if anything, for example?) This is an injustice to the people of the state, who have a right to expect their children's biology textbooks to be a straightforward presentation of the most up-to-date scientific information, facts not privileged from a religious or anti-religious perspective."*

Other errors and problems still remain.{5} But this has been a good start.

Notes

1. Sample testifier statements:

- *Steven Schafersman, President of Texas Citizens for Science: "I am aware that the Discovery Institute, a creationist organization out of Seattle, Washington, has become involved in the Texas education process just as they did recently in Kansas and Ohio. They have prepared written testimony about the books submitted here and apparently deputized a member of a Texas creationist organization, Probe Ministries, to speak on their behalf." (Hey, that's me!)*
- *Ms. Amanda Walker: "So what we are really doing here is talking about using the political process to override the science process to suit creationists whose theories can't stand up in the global scientific community"*
- *Dr. David Hillis, Professor of Biology, UT Austin: "The objections to evolution in textbooks that you have heard are not about science or facts. They are about pushing a religious and political agenda."*
- *Ms. Kelly Wagner: "If you consider at all adding intelligent design to any of these textbooks, I would like you, again, this is a very, very personal question. I would like you to think, am I furthering medical research? Or am I contributing to Kelly Wagner's early death?" Ms. Wagner felt that "weakening" evolution in the high school biology textbooks would compromise medical research and therefore that research on her heart condition could be compromised.*

2. Most likely these would have been the Holt Biology book and the Glencoe Biology book, both of which made numerous constructive changes.

3. Holt Biology, p. 283

4. Constance Holden, "Texas resolves war over biology texts," *Science* Vol. 302(Nov.14, 2003):1130.

5. Use this website from Discovery for full report on the

Texas debate. http://www.discovery.org/csc/texas/.

©2003 Probe Ministries