

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

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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*

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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.

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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).

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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

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5. Ibid, 47-49.

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11. Ibid, 83.

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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.

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.

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/>.

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The Galapagos Islands: The Bohlins' Visit



The Galapagos Islands, off the coast of Ecuador, are where Charles Darwin received the inspiration for the theory of evolution. In observing the islands' ecosystem and how its bird and reptile inhabitants compared to similar South American cousins, Darwin assembled what has become the driving philosophy of science.

In May 2003, Dr. Ray and Sue Bohlin visited the Galapagos Islands with a different perspective, focusing on intelligent design and the natural limits to biological change. Here is their report.

[1 – Why Visit the Galapagos Islands?](#)

[2 – Thursday PM: Bartolome](#)

[3 – Friday AM: Punta Espinosa](#)

[4 – Friday PM: Tagus Cove](#)

[5 – Saturday AM: Punta Moreno](#)

[6 – Saturday PM: Urbina Bay](#)

[7 – Sunday AM: Darwin Research Station](#)

[8 – Sunday PM: Santa Cruz Highlands](#)

[9 – Monday AM: Beach Visit](#)

[10 – Galapagos Wrap Up: ICR Lecture, What It All Means](#)

The Galapagos Islands: Evolution's Sacred Ground

Dr. Bohlin helps us understand the significance of the Galapagos Islands in the birth of the evolutionary theory of Charles Darwin. Based on personal observation on these unique isolated islands, he explains why he is not convinced that the animals of these islands make a case for the evolution of all living things.

What's So Important About the Galapagos Islands?

The Galapagos Islands are located in the Pacific Ocean, 650 miles off the coast of Ecuador in South America. They are isolated from any other island group or land form.

What's so important about the Galapagos Islands? Here are four reasons:

First, because they are extremely isolated, the Galapagos Islands are home for dozens of species of both plants and animals found nowhere else in the world. The Galapagos Tortoise, for example, is the largest reptile found anywhere on the planet, and it lives longer than any animal known to man. The oldest is currently over 170 years old and lives in a zoo in Australia. Other unique animals include the Flightless

Cormorant, the Marine Iguana, the Galapagos Penguin, and Darwin's Finches.

There are even unique forms of plants including numerous forms of cacti and at least thirteen species of sunflower or daisy-like plants, one of which is a "sunflower" tree with bark and no tree rings.

Second, Darwin's visit to the Galapagos for five weeks in 1835 on the HMS Beagle provided the starting point for the development of his theory of natural selection. Darwin had believed that God individually created each species. However, when he saw and studied variations between similar species from island to island, he correctly reasoned that a natural process made more sense. However, he eventually threw the baby out with the bathwater by reasoning that all species arose by a natural process through natural selection. Darwin's Finches continue to be used as a textbook example of evolution today.

Third, similar to the Hawaiian Islands, the Galapagos Islands are volcanic. There is a geological hotspot deep in the earth's crust underneath the Pacific tectonic plate where magma flows to the surface. The hotspot remains stationary. However, as the Pacific plate moves from west to east, new volcanic islands begin to appear beneath the sea until they eventually poke above the surface to create a new Galapagos island. The youngest of the islands is the island of Fernandina which is the westernmost island. It is estimated geologically to be 800,000 years old. The oldest islands off to the east are estimated to be 3 million years old.

Fourth, two major ocean currents affect the climate of the Galapagos. First, from the south comes the Humboldt Current from Antarctica. Second, a deep-water current comes from the west. Upon reaching the islands, this cold deep water current brings with it a large supply of nutrients that feed the bottom of the food chain. Consequently the western waters of the Galapagos are colder and richer in marine life. These

cold-water currents keep the temperature of the islands rather moderate for islands on the equator. In the Galapagos, the waters usually range from the 60s to the 70s F (15-22 degrees Centigrade), creating a more temperate climate for these equatorial islands.

All these factors combine for a most unique experience. The Galapagos have been a "poster child" for evolution ever since Darwin. We'll see how well that holds up.

What Evidence of Evolution Do Darwin's Finches Provide?



[Click to see Ray's picture report of his trip to the Galapagos Islands](#)

In May 2003 I had my first opportunity to visit the Galapagos Islands with a group led by several scientists from the Institute of Creation Research. Our goal was simply to see for ourselves many of the unusual animals and plants which so heavily influenced Darwin in the development of his theory of natural selection.

Look in almost any high school biology textbook and you will find some mention, if not a whole section, on what are now known as *Darwin's finches*. Darwin's finches are comprised of thirteen different species of small finches that arose from a single species that colonized the islands. The finches have adapted to differing food sources ranging from different size seeds, to insects, to cactus flowers, to even blood. The major feature of these finches that has changed is the size and

shape of their beaks, but the differences are very subtle.

When we got our first glimpse of the finches we found out just how subtle the differences in beak size and shape really are. Without being able to compare two or three birds right next to each other, we found it virtually impossible to identify them. This observation confirms recent research by Princeton researchers Peter and Rosemary Grant. The Grants have come to the Galapagos Islands every year since the mid-1970s. They have banded, measured, and weighed literally thousands of finches of nearly all species.

Of the thirteen species, six are called ground finches, and they feed on different size seeds and cactus flowers. These finches particularly differ almost exclusively in their beak size or shape. The Grants have found that these finches will “evolve” to larger and smaller beaks depending on the seed availability based on a wet or dry rainy season.

They also learned that most of these six ground finches will interbreed, and the hybrids are fertile, meaning they can also breed among themselves. This information is quite startling because it means that these six species may actually be one species. And the actual degree of change is quite miniscule. The average beak size may change by only a half a millimeter from dry to wet season. These six finches are also indistinguishable in their mtDNA.

These species are so similar in the field that some of the workers and guides from the Darwin Research Station on the Galapagos have a saying: “Only God and Peter Grant can identify Darwin’s finches.”

As an icon of evolution, the finches are far less than hoped for.[\[1\]](#) Yes, they do document the reality of natural selection. But the degree of selection is quite small and seemingly insignificant. They are a wonderful example of the ability God has given His creatures to be fruitful and

multiply in a fallen world.

Why Save the Galapagos Tortoise?

The word Galapagos is Spanish for *saddle*. The islands were named for a particular variety of Galapagos tortoise known as the saddleback. These tortoises inhabit the drier islands and feed primarily on many varieties of prickly pear cactus. The saddle refers to a striking feature of their shell that forms a large space just above the neck that allows the tortoise to reach high to grab a succulent piece of cactus.

Since the islands were named for the saddleback tortoise they are a symbol of the islands. As I mentioned earlier, these tortoises are the largest living reptiles. They are also the longest living animals in the world. There is a female Galapagos tortoise in a zoo in Australia by the name of Harriet. Harriet was reportedly taken from the Galapagos Islands by Charles Darwin himself. She eventually was taken to Australia and is reported to be 173 years old, born around 1830. This would make her the oldest living creature on earth.

Harriet is a dome tortoise as opposed to the saddleback variety. Dome tortoises eat low-lying grasses, vegetation and fruits. When Darwin came to the Galapagos Islands in 1835, there were approximately 300,000 tortoises on eleven islands. There are five different varieties on the largest island, Isabella. The five varieties are found associated with the five large volcanic craters where water accumulates and grass is abundant. The other ten varieties inhabited a specific island, one variety of tortoise per island.

The islands were a favorite stopping place for whaling ships and ships crossing the Pacific. Sailors would come on shore and round up twenty to thirty tortoises to be used as food on the long voyage. A tortoise could remain alive with little or no food or water for months, providing fresh meat for the long voyage.

In addition, as people began colonizing the islands, they brought with them rats and mice that would eat the tortoise eggs. Introduced goats and pigs competed with the tortoises for food. Consequently, the tortoise population has been reduced to around 20,000. Some of the specific island varieties have gone extinct. Lonesome George has become the symbol of the plight of the giant tortoise. He is the only remaining member of the tortoises from Pinta Island, and he seems to be refusing to breed.

The Darwin Research Station on Santa Cruz Island in the Galapagos is involved in an extensive captive breeding program, trying to reestablish the tortoises in areas where they have disappeared. But why? If evolution is true, then let natural selection take its course. If they survive, fine. If not, that's just life in an evolutionary world. In Genesis, however, we are commanded to have rule and dominion over God's creatures. Wherever practicable, we have a biblical mandate to preserve the creatures He has made in the environment He provided for them (Psalm 104). So the Darwin Research Station is unwittingly acting on a Biblical worldview.

Strange Creatures of the Galapagos

Though the Galapagos Islands are world famous, they didn't particularly impress Darwin when he first arrived. In his book, *Voyage of the Beagle*, he wrote, "Nothing could be less inviting than the first appearance. A broken field of basaltic lava, thrown into the most rugged waves, and crossed by great fissures, is everywhere covered by stunted, sunburnt brushwood, which shows little signs of life." [\[2\]](#)

Though we may disagree with Darwin on many of the conclusions he drew from his observations of the Galapagos wildlife, he was nonetheless an excellent observer and rather humorous reporter. For instance, one of the well-known inhabitants of the Galapagos is the marine iguana, the only lizard in the world to feed in the sea. Darwin described it this way,

“It is extremely common on all the islands throughout the group, and lives exclusively on the rocky sea-beaches, being never found, at least I never saw one, even ten yards from shore. It is a hideous-looking creature, of a dirty black colour, stupid, and sluggish in its movements.”{3}

Darwin aside, these creatures are fascinating. They feed on algae and seaweed close in to shore. They swim easily with a serpentine movement with their limbs tucked close to their body. Since the water is so cool, they need several hours to sun themselves before entering the water for breakfast. They will only stay in the sea for about twenty minutes and never longer than an hour. When warming themselves, they lie perpendicular to the sun so their body is fully exposed to the sun. When maintaining their temperature they will face the sun directly and lift their chests off the ground to allow the sea breeze to provide ventilation.

The marine iguana’s cousin, the land iguana eats cactus pads and leafy vegetation and never ventures toward the sea. They also didn’t impress Darwin terribly much. He described them this way.

“We will now turn to the terrestrial species, . . . Like their brothers the sea-kind, they are ugly animals, of a yellowish orange beneath, and of a brownish red colour above: from their low facial angle they have a singularly stupid appearance. . . . In their movements they are lazy and half-torpid.”{4}

Evolutionists suggest that these two species derived from a common ancestor over ten to twenty million years ago (although the oldest island is only 3 million years old!). But we learned that these two species would interbreed on occasion. The hybrids live for only seven to eight of the usual forty years, and their eating habits are strangely intermediate. The hybrids will eat cactus but not leafy vegetation, and will eat

seaweed and algae but only at low tide when they can scramble over the rocks to get it. They won't enter the water. This level of hybridization makes it unlikely they are as old as evolutionists suggest.

Evidence for Evolution on the Galapagos Islands?

Thus far we have reviewed some of the amazing animals and plants found on the Galapagos Islands in the Pacific Ocean. The mockingbirds, tortoises, and finches played a role in the formulation of Darwin's theory of natural selection. The Galapagos Islands and their varied and diverse wildlife continue to serve as examples of evolutionary change.

In my brief five-day visit to the Islands, I made a number of observations that cast doubt on the evolutionary significance of these islands.

Earlier this week we talked about Darwin's finches. These thirteen finches most likely are descended from a flock of more than thirty finches that colonized the islands about 2 million years ago according to evolutionists. They vary considerably in their beak size and shape as they have adapted to different food sources. As much as these finches have been studied, there is still a great deal we don't know.

For instance, we know nothing of the genetics of beak size and shape. It's certain that beak size is a heritable trait, but just what the genetic cause of the variation is, we don't know. As we said earlier, there may be as few as six actual species of finches on the islands, not thirteen. The changes in beak size and shape may simply have been due to genetic variation the original flock carried with them to the islands in the first place.

The changes between species are very small as we found out trying to identify them. The selection that has been

documented varies only from dry to wet years and no overall trend has been observed. So Darwin's finches are not much of an example of evolution after all.

Another strange creature on the Galapagos Islands is the flightless cormorant. Cormorants are birds that inhabit the shores of lakes, rivers, and oceans. They usually feed by diving into the water for fish. Cormorants will then perch above the water's surface and dry their feathers by holding their wings out for maximum air exposure. Flying requires dry wings.

The flightless cormorants of the Galapagos have wings so reduced that they are unable to fly at all. They catch fish by swimming in the water much as a penguin does using their large powerful feet for propulsion. The reduced wing size is probably due to a single mutation that short-circuits wing development in the cormorant chick. The change is indeed quite dramatic, but the change involves a loss of a feature, not the gain of a new adaptation. This is often the case in the origin of new adaptations. Something is lost, not gained. Evolution must be able to explain the gain of new features, not simply explain how an organism managed to survive when it lost an important structure. So even the dramatic case of the flightless cormorant is not real evidence for evolution.

The Galapagos are a naturalist's wonderland. They guard their mysteries in a shroud of isolation and time. They are a good example of the fact that there is much to learn about the world God created.

Notes

1. Jonathan Wells, *Icons of Evolution* (Washington, DC: Regnery Publishing 2000), p. 159-175.
2. Charles Darwin, *The Voyage of the Beagle*, Harvard Classics (Cambridge: Harvard University Press), p. 377-378.

3. Ibid, p. 390.

4. Ibid, p. 392.

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Are We Alone in the Universe? A Biblical View of Aliens

Dr. Ray Bohlin provides a Christian view on the probability and meaning of life on other planets. From a biblical perspective, what would it mean to find evidence of life beyond this earth?



This article is also available in [Spanish](#).

Life on Mars?

There was great excitement in the media when a group of scientists from NASA announced they had found evidence of life on Mars. Their evidence, an alleged Martian meteorite, was vaulted to center stage, and everyone from CNN to *Nightline* ran special programs with interviews and video footage of the scientists and their prized specimen. President Clinton was so excited by the announcement that he praised the U.S. space program and took the opportunity to establish a bipartisan space summit headed up by Vice President Al Gore to study the future of U.S. space research. Aren't we already doing that?

Anyway, clearly this announcement took the country by storm. Some of the scientists were embarrassingly gushing about how significant these findings were. The media frenzy was prompted by the early release of an article from the journal *Science*,

the premier scientific journal in the U.S. The article was due out the following week, but *Science* decided to release it early because it had leaked out.

Here's what the excitement was about. A group of scientists had studied a meteorite that had been found in the ice of Antarctica. Previously, it had been determined that this meteorite had originated on Mars by studying the gaseous content of glass-like components of the meteor. The gas composition matched very well the atmosphere of Mars. This conclusion seems reasonable.

So, they presumed they had a meteor from Mars. Next they looked for evidence of life on and in the crevices of the meteor. They found two types of molecules that can form as a result of life processes, carbonates and complex molecules called polycyclic aromatic hydrocarbons or PAHs. They also found shapes in the rock that resembled those of known microfossils on Earth. Microfossils are fossils of one-celled organisms which are rather tricky to interpret.

Well, what does this mean? Obviously, the NASA scientists felt the things just mentioned provided ample evidence to conclude that life once existed on Mars. However, the chemical signs could all be due to processes that have nothing to do with life, and the supposed microfossils are 100 times smaller than any such fossil found on Earth. Other groups that studied this same meteorite concluded that either the temperature of formation of the chemicals was far too high to allow life (over 700 degrees C) or that other chemical signals for life were absent. John Kerridge, a planetary scientist from the University of California at San Diego, said, "The conclusion is at best premature and more probably wrong." But listen to the concluding statement in the paper in *Science*:

Although there are alternative explanations for each of these phenomena taken individually, when they are considered collectively, particularly in view of their spatial

association, we conclude that they are evidence for primitive life on Mars.[\[1\]](#)

In plain English, there are reasonable non-life explanations for each of the evidences presented, but we just think that they mean there is life on Mars. The evidence *is* very equivocal and was challenged by many other scientists, but the media did not report that as fully. But maybe they are right! In fact, there is one simple explanation that is consistently ignored by media and scientists alike. If there really is, or has been, life on Mars, what could that possibly mean for evolution, and more importantly, does it somehow refute creation? We'll look at that next.

What Would Life on Mars Mean?

Because of the recent announcement of signs of life on Mars, many people were encouraged in their belief that we are not alone in the universe. These signs are far from certain and probably wrong, but if it's true, what would these results mean to evolutionists? Moreover, is there any reason for Christians to fear confirmation of life on Mars?

Let us assume, then, for the moment that the evidence from this Martian meteorite is legitimate evidence for life on Mars—life that at some point in the past actually existed on Mars. What would it mean?

For evolutionists the evidence is perceived as confirmation that life actually arises from non-life by purely chemical processes. In addition, evolutionists draw the conclusion that life must be able to evolve very easily since it did so on two adjacent planets in the same solar system. Therefore, even though origin of life research is actually at a standstill, such a discovery seemingly confirms the notion that *some* chemical evolution scenario *must work*. I will address this assumption later.

On the other hand, some have stated that if there is life on Mars, creationism has been dealt a death blow. They rationalize that since (1) we now know that life can evolve just about anywhere, and (2) the Bible never speaks of life anywhere but on Earth, the Bible is, therefore, unreliable. Besides, they reason, why would God create life on a planet with no humans? However, since the Bible is absolutely silent on the subject of extra-terrestrial life, we can make no predictions about its possibility. God is certainly free to create life on planets other than Earth if He chooses.

Getting back to the evolutionists' glee at the possibility of life evolving on other planets, the real question is whether this is the proper conclusion if life is indeed found on Mars? The simple answer, inexplicably avoided by the media, is NO! The simplest answer to the possible discovery of life on Mars is that the so-called "Martian life" actually came from Earth!

Think about it this way. The meteorite that was found is supposed to have existed on Mars previously. How did it get to Earth? Well, it is hypothesized that a large meteorite crashed into Mars throwing up lots of debris into space, some of which finds its way to Earth and at least a few of which are found by Earthlings. If you are thinking with me, you now realize that the same scenario could have been played out on Earth.

Evolutionists suggest that the Earth was under heavy meteor bombardment until at least 3.8 billion years ago—about the time they say life appeared on Earth. Christian astronomer Hugh Ross states it this way:

Meteorites large enough to make a crater greater than 60 miles across will cause Earth rocks to escape Earth's gravity. Out of 1,000 such rocks ejected, 291 strike Venus, 20 go to Mercury, 17 hit Mars, 14 make it to Jupiter, and 1 goes all the way to Saturn. Traveling the distance with these rocks will be many varieties of Earth life. {2}

Ross also documents that many forms of microscopic life are quite capable of surviving such a journey. All this is quite well known in the scientific community, but I have not seen it mentioned once in any public discussion. I believe the reason is that the possibility of life having evolved on Mars is too juicy to pass up.

The Improbability of Life Elsewhere in the Universe

I would like to address the amazing optimism of so many that the universe is teeming with life. No doubt this is fueled by the tremendous success of such science fiction works as *Star Wars* and *Star Trek* which eloquently present the reasonableness of a universe pregnant with intelligent life forms.

Inherent within this optimism is the evolutionary assumption that if life evolved here, certainly we should not arrogantly suppose that life could not have evolved elsewhere in the universe. And if life in general exists in the universe, then, of course, there must be intelligent life out there as well.

This is the basic assumption of the SETI program, the Search for Extra-Terrestrial Intelligence. This is the program, now privately funded instead of federally funded, that searches space for radio waves emanating from another planet that would indicate the presence of intelligent life. But is such a hope realistic? Is there a justifiable reason for suspecting that planets suitable to life exist elsewhere in the universe?

Over the last two decades scientists have begun tabulating many characteristics of our universe, galaxy, solar system, and planet that appear to have been finely-tuned for life to exist. Christian astronomer and apologist, Dr. Hugh Ross documents all these characteristics in his book *Creator and the Cosmos*, [{3}](#) and is constantly updating them. In the book's third edition (2001), Ross documents 35 characteristics of the universe and 66 characteristics of our galaxy, solar system,

and planet that are finely-tuned for life to exist.

Some examples include the size, temperature, and brightness of our sun, the size, chemical composition, and stable orbit of Earth. The fact that we have one moon and not none or two or three. The distance of the Earth from the sun, the tilt of the earth's axis, the speed of the earth's rotation, the time it takes Earth to orbit the sun. If any of these factors were different by even a few percent, the ability of Earth to sustain life would be severely compromised. Recently it has been noted that even the presence of Jupiter and Saturn serve to stabilize the orbit of Earth. Without these two large planets present exactly where they are, the Earth would be knocked out of its present near circular orbit into an elliptical one causing higher temperature differences between seasons and subjecting Earth to greater meteor interference. Neither condition is hospitable to the continuing presence of life.

Ross has further calculated the probabilities of all these factors coming together by natural processes alone to be 1×10^{-166} ; that's a decimal point followed by 165 zeroes and then a one. A very liberal estimate of how many planets there may be, though we have only documented less than 100, is 10^{22} or 10 billion trillion planets, one for every star in the universe. Combining these two probabilities tells us that there are 10^{-144} planets in the entire universe that could support life. Obviously this is far less than one; therefore, by natural processes alone, we shouldn't even be here—let alone some kind of alien life form.

So unless God created life elsewhere, we are alone, and for the materialistic evolutionist, this is a frightening thought.

Problems with Chemical Evolution on Earth

The statistics given above mean that we are really alone in

the universe and that there is no hope of finding intelligent civilizations as in the television program *Star Trek*. While it means there is no one out there to threaten our survival, there is also no one out there to save us from our own mistakes.

This observation highlights why I believe the scientific community and the media became so excited about the possibilities of life on Mars. Efforts to determine how life could have evolved from non-living matter have been so fraught with problems that it makes the possibility of life elsewhere extremely remote. But if it could be proved that life evolved elsewhere, then it would demonstrate that life springs up rather easily, and we just haven't found the right trick here on Earth to prove it. But this just leapfrogs the problem.

But is the evolution of life from non-living chemicals really that impossible? The difficulties fall into three categories, the Chemical Problem, the Thermodynamic Problem, and the Informational Problem. These issues are presented comprehensively in a book by Thaxton, Bradley, and Olsen titled *The Mystery of Life's Origin*^{4} and in a chapter in the edited volume by J. P. Moreland, *The Creation Hypothesis*.^{5}

Chemical Problems are illustrated by the difficulty in synthesizing even the simplest building block molecules necessary for life from inorganic precursors. Amino acids, sugars, and the bases for the important nucleotide molecules that make up DNA and RNA were all thought to be easily synthesized in an early Earth atmosphere of ammonia, methane, water vapor, and hydrogen. But further experiments showed this scenario to be unrealistic. Ammonia and methane would have been short-lived in this atmosphere; the multiple energy sources available would have destroyed the necessary molecules and water would have broken apart into hydrogen and oxygen. The oxygen was scrupulously avoided in all prebiotic scenarios because it would have poisoned all the necessary reactions.

Thermodynamic Problems arise from the difficulty in assembling all these complex molecules that would have been floating around in some prebiotic soup into a highly organized and complex cell. To accomplish the task of achieving specified complexity in life's molecules such as DNA and proteins, the availability of raw energy for millions of years is not enough. All systems where specified complexity is produced from simple components requires an energy conversion mechanism to channel the energy in the right direction to accomplish the necessary work. Without photosynthesis, there is no such mechanism in the prebiotic Earth.

The Informational Problem shows that there is no way to account for the origin of the genetic code, which is a language, without intelligent input. Informational codes require intelligent preprogramming. No evolutionary mechanism can accomplish this. Life requires intelligence.

So you can see why evolutionists would get excited about the possibility of finding evolved life elsewhere. It's because life is seemingly impossible to evolve here. So, if it did happen elsewhere, maybe our experiments are just missing something.

Independence Day, The Movie

In the movie *Independence Day*, an alien battle force swoops down on Earth with the intention of destroying the human race, sucking the planet dry of all available resources and then moving on to some other unlucky civilization in the galaxy. But, those indomitable humans aided by good old American ingenuity outsmart those dull-witted aliens and Earth is saved. The story has been told many times, but perhaps never as well or never with such great special effects. The movie was a huge success.

But why are we continually fascinated by the possibility of alien cultures? The movie gave the clear impression that there

must be great numbers of intelligent civilizations out there in the universe. This notion has become widely accepted in our culture.

Few recognize that the supposed existence of alien civilizations is based on evolutionary assumptions. The science fiction of *Star Trek* and the *Star Wars* begins with evolution. As I've stated earlier, evolutionists simply rationalize that since life evolved here with no outside interference, the universe must be pregnant with life. Astronomer Carl Sagan put it this way after he had reviewed the so-called success of early Earth chemical evolution experiments:

Nothing in such experiments is unique to the earth. The initial gases, and the energy sources, are common throughout the Cosmos. Chemical reactions like those in our laboratory vessels may be responsible for the organic matter in interstellar space and the amino acids found in meteorites. Some similar chemistry must have occurred on a billion other worlds in the Milky Way Galaxy. The molecules of life fill the Cosmos. {6}

Sagan strongly suggests that the probabilities and chemistry of the universe dictate that life is ubiquitous in the galaxy. But as I stated earlier, the odds overwhelmingly dictate that our planet is the only one suitable for life in the universe. And the chemistry on Earth also indicates that life is extremely hard to come by. The probability of life simply based on chance occurrences is admitted by many evolutionists to be remote indeed. Many are now suggesting that life is inevitable because there are yet undiscovered laws of nature that automatically lead to complex life forms. In other words, the deck of cards is fixed. Listen to Nobel Laureate and biochemist, Christian de Duve:

We are being dealt thirteen spades not once but thousands of

times in succession! This is utterly impossible, unless the deck is doctored. What this doctoring implies with respect to the assembly of the first cell is that most of the steps involved must have had a very high likelihood of taking place under the prevailing conditions. Make them even moderately improbable and the process must abort, however many times it is initiated, because of the very number of successive steps involved. In other words, contrary to Monod's affirmation, the universe was—and presumably still is—pregnant with life.[\[7\]](#)

The only problem with de Duve's suggestion is that we know of no natural processes that will lead automatically to the complexity of life. Everything we know of life leads to the opposite conclusion. Life is not a product of chance or necessity. Life is a product of intelligence.

Without Divine interference we are alone in the universe and without Christ we are—and should be—terrified. The gospel is as relevant as ever.

Notes

1. *Science*, 16 August 1996, 273:924-30.
2. *Creator and the Cosmos*, NavPress, 2001, p. 210.
3. *Ibid.*, pp. 145-199.
4. Lewis and Stanley, 1984.
5. InterVarsity Press, 1994, pp. 173-210.
6. *Cosmos*, Random House, 1980, p. 40.
7. *Vital Dust*, Basic Books, 1995, p. 9.

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PBS Evolution Series

Darwin's Dangerous Idea

Some evolutionists are definitely worried. Creation, intelligent design and a general dissent concerning Darwinian evolution continue to gain ground—so much so that a deliberate counterattack has been launched. Using scientists from around the world, professional defenders of evolution, beautiful nature photography, computer graphics and simulations, the prestige of the PBS NOVA series and the financial backing of Microsoft billionaire Paul Allen, a monumental defense and celebration of evolution has been produced.

The new PBS Evolution Series is a seven part, eight hour documentary originally aired on PBS stations around the country in late September of 2001 and rebroadcast in May and June of 2002. Accompanying the video series is an interactive Web site, 360-page companion book, coordinated teacher training and education, and a determined publicity campaign aimed at getting the series into the nation's high schools.

The explicit goals of the series are to help students understand the critical importance of evolutionary theory in understanding so many scientific and health issues of today—from AIDS to antibiotic resistance to fighting agricultural pests to even how we choose a sexual partner. The producers set out to establish the overwhelming evidence behind evolution and the soundness of the science behind it. They specifically sought to pursue solid science journalism and forego the religious realm.

Essentially, the series has failed on all counts. This beautiful documentary is loaded with speculation, exaggerated evidence and claims, glossing over of legitimate controversy, and a persistent hostility towards any religious perspective

deemed incompatible with evolution.

Episode One begins with a dramatization of a conversation between Charles Darwin and Captain Robert Fitzroy of the HMS Beagle in South America as Darwin is purchasing a fossil. The fictitious conversation clearly pokes fun at the Biblical account of the flood. Darwin was nowhere near as skeptical as portrayed, and Fitzroy was nowhere near as literal either. This opening scene lays the groundwork for a continual assault on history and the evidence to make evolution look as positive as possible and opponents of evolution as silly as possible.

This two-hour opening episode crosses paths with religion several more times in discussions of the philosophical meaning of evolution in an interview of Kenneth Miller, a Darwin defender who finds no incompatibility between his Christian faith and Darwinian evolution. In this opening episode the producers present a confusing contradiction. On the one hand Darwin's dangerous idea precludes any true meaning to life and on the other hand, Darwinian evolution is completely compatible with an informed Christian faith. For more detailed analysis of this episode consult the Discovery Institute's free Viewer's guide available on the Internet at www.reviewevolution.com.

“Great Transformations” and “Extinction”

Perhaps the most foundational episode is Episode Two: The Great Transformations. One's expectation would be the presentation of numerous persuasive transitional forms demonstrating without doubt, the common ancestry of all life. Instead we are treated to a certainty based on the usual arguments from authority, selective fragmentary fossil evidence, and speculative molecular mechanisms.

The opening segment presents the mounting evidence for the amazing transition from a terrestrial wolf-like vertebrate to modern aquatic whales. Lots of fossils and reconstructions are

paraded before us, unfolding the supposed story of whale evolution. Complete skeletons are pictured with no indication that they are based on very partial fossil finds. The overall transitional series is discussed with certainty despite the fact that evolutionists themselves admit that the known members of the transitional series are not thought to be the actual members of the transitional series but just representative of what the actual transitional species may have looked like.[\[1\]](#) Also missing is the admission that, by the very nature of fossils, it can never really be known if any one fossil was ancestral to another.

Also featured in this episode is the stunning Cambrian explosion of animal life forms featuring Simon Conway Morris. Morris freely admits that “this sudden appearance of the fossils led to this term, the Cambrian explosion. Darwin, as ever, was extremely candid, he said, Look, this is a problem for my theory. How is it that suddenly animals seem to come out of nowhere? And to a certain extent that is still something of a mystery.” As the segment develops, no attempt is made to explore or resolve this mystery. The experts make only vague references to evolution tinkering with what already exists. But even tinkering is a design activity, design with a purpose. Natural selection would be better described as a blindfolded man trying to navigate a minefield.

Episode 3 explores the evolutionary significance of extinction. Both the great Permian extinction of 250 million years ago and the KT extinction of dinosaur fame of 65 million years ago are explored and make fascinating stories. Their relation to evolution is obscure, however. Mass extinctions supposedly open up the playing field for new and diverse species to evolve due to less competition. But Darwinian natural selection supposedly thrives on competition. The segments on biological invaders, while important in and of themselves, have little to add to the evolutionary debate. Biological control has been practiced for centuries with no

knowledge of evolution.^{2} Once again, we witness lots of authoritative posturing but little evidence for evolution.

“The Evolutionary Arms Race” and “Why Sex?”

For many years medical authorities have been warning of the dangers of infectious bacteria becoming resistant to antibiotics. The overuse and misuse of antibiotics in western society has led to an increase in the number of strains of bacteria that are resistant to our primary defense against infection. In Episode Four of PBS’s Evolution Series titled “The Evolutionary Arms Race,” we are told this is evolution in action.

First, this statement leads to the conclusion that knowledge of evolution is essential to designing adequate health care. And second, labeling antibiotic resistance as evolution in action implicitly states that evolution is a fact, since antibiotic resistance is a fact. This is another case of a selective use of evidence. What the producers of *Evolution* don’t say is that the mechanisms for antibiotic resistance have been known for years. Usually the capacity to resist antibiotics has always been in the bacterial population and does not result from mutation. Even when a mutation is responsible, a new function is never evolved, just the damaging of an existing function. Sometimes the mutation results in the antibiotic being expelled from the cell faster or taken in more slowly. This doesn’t create a new species and doesn’t fundamentally change the organism.

Another factor left out of the discussion is that antibiotic resistance always comes with a cost of its own. Antibiotic resistant bacteria are always inferior to the original wild-type bacteria. Their growth is stunted. Sometimes these costs can be compensated for but also at additional costs. Resistant bacteria are not better bacteria. Remove the antibiotic and

they quickly lose out to the original wild-type bacteria. Therefore, to suggest that in the case of resistant tuberculosis that the bacteria evolved right inside the human host is highly misleading. The bacterial resistant forms were already present, the bacterium has not changed or evolved at all.

While the episode gives numerous examples of natural selection on a micro scale, the evidence discussed tells us nothing of how antibiotic resistance arose in the first place or how ants, molds, fungi, and bacteria first became intricately associated.

The fifth episode contains perhaps the least science and relevance to evolution, but will certainly be the most entertaining and even titillating for high school students. The episode "Why Sex" tries to ascertain the purpose and even evolution of sexual reproduction. While containing some helpful information and case studies, the program is full of speculative storytelling and an overload of sexual displays and sexual acts from fish to lizards, to birds, to chimpanzees and even a highly unnecessary and suggestive encounter between humans.

Also included is a highly controversial, yet factually presented discussion of evolutionary psychology and one researchers ideas that all forms of human artistic endeavors are little more than sexual displays. Some of their own previously used evolutionary experts would find most of this episode an incredible waste of time and money.

"The Mind's Big Bang" and "What About God?"

The uniqueness of human beings presents a difficult evolutionary puzzle. So much of who and what we are is categorically different from other animal species that trying to account for it by mutation and natural selection presents a

tough challenge. In Episode Six, "The Mind's Big Bang," we unfortunately don't get much of an answer.

The episode begins by documenting the amazing human capacity for art in the caves of France. This launches a long series of segments that document the early appearance of artistic expression that has its roots in the development of tool making. Eventually this explosion of capacities rooted in the brain is traced to the remarkable development of human language. As in other episodes there is lots of speculation about the selective advantages of language, but this tells us nothing of how language evolved. The discussion gives the impression that if we can just discover what language is used for, we will know how it evolved. This is typical evolutionary story-telling masquerading as science.

The Cambridge Encyclopedia of Language candidly admits that "For centuries, people have speculated over the origins of human language. . . . [but] the quest is a fruitless one. . . . We have no direct knowledge of the origins and early development of language, nor is it easy to imagine how such knowledge might ever be obtained." [{3}](#) The Discovery Institute's Viewers Guide also notes that we are told that language was the key to our becoming human. In Episode Two, however, we were told it was the ability to walk on two legs and in Episode Five it was using our brains to choose sexual partners. This confusion of "key events" exposes them for the speculation they truly are. [{4}](#)

The final episode "What About God?" reveals the entire series as the propaganda it is meant to be. Here we meet the old science vs. religion argument in all its glory. The Evolution producers go to great lengths to distort the controversy to their own ends. The Scopes trial and the Sputnik-induced revolution in science education are neatly packaged and distorted as science vs. religion. The inquiring and passionate science students and professors who have no quarrel with evolution are favorably portrayed against uneducated

parents and naïve Bible literalists. Theistic evolutionist Keith Miller is pictured as a liberator to Wheaton College students who don't want to be perceived as unintelligent.

What becomes unmistakably clear in this episode is that the reigning naturalistic stranglehold on science education is to be maintained at all costs. Those who oppose it, risk being branded as dangerous or stupid or ignorant or all three. Censorship of facts contrary to evolution is justified in the name of science. The bottom line is that "It's OK for people to believe in God, as long as their beliefs don't conflict with Darwinian evolution. A religion that fully accepts Darwin's theory is good. All others are bad." {5}

The PBS Evolution Web Site

Located at www.pbs.org/wgbh/evolution, the PBS Evolution Web site is a goldmine of information and teaching suggestions along with interactive games and exercises aimed at sharpening one's evolutionary skills. But visitors should also expect that much of the information contained here employs the same sleight of hand that the video series uses in relating evidence for evolution. With such a great volume of information available at the *Evolution* Web site, I will direct my attention to one article as an example. Under the main heading of "Change," an essay is offered critiquing Intelligent Design. The essay is authored by Kenneth Miller, a Brown University biology professor, featured in the first episode as a Roman Catholic who sees no problem with evolution.

The essay is titled "Life's Grand Design" and purports to explain how evolution accounts for the design of nature far better than an intelligent designer would. His entire discussion revolves around the design of the human eye. {6} On page one Miller presents the problem. The eye is exquisite in its design, accomplishing the wondrous effect of color vision with a very complicated design. How could it possibly have

evolved one step at a time? On page two, Miller begins his response with the standard blind watchmaker explanation from Richard Dawkins. Miller emphasizes the gradual slight improvements and that all those that are positive will be selected. This is not necessarily true. It is well known that some genetic changes will be so slight that they do not offer a significant enough selective advantage and therefore, will be lost. Miller ignores the uncomfortable details.

Miller then describes how easy it would be to build an eye from just a few light-sensitive cells. But he starts with "light-sensitive cells." Where did these come from? How did they become light sensitive? The molecular mechanism of light sensitivity is quite complex and one of Michael Behe's examples of irreducible complexity. But once again Miller ignores the uncomfortable details. Miller states, "it is possible to draw a series of incremental changes that would lead directly to the lens and retina eye." But you know, I'm not interested in whether it can be drawn. I want to know how it would evolve biologically.

Finally Miller delivers the *coup de grace*; the eye exhibits design flaws that any engineer would never employ. You see, the human eye seems to have things a little backwards. The light-sensitive cells face the back of the eye or the retina, instead of the front of the eye where the light comes from. Therefore, the incoming light must pass through the nerve cells and blood vessels first, potentially distorting the image. Not only that, but the nerve cells eventually bunch together before punching through the retina en route to the brain, therefore creating a dangerous blind spot. Surely an intelligent designer wouldn't do it that way. The eye is therefore a great example of evolution at work. Evolution simply arrives at the best available solution.

But again, Miller ignores the details. He doesn't reveal that the layer of cells behind the nerve cells, behind the blood vessels and behind the photoreceptor cells, is an immensely

important group of cells we will abbreviate as the RPE (Retinal Pigmented Epithelium). The RPE is necessarily in close proximity to the photoreceptor cells, the rods and cones, because the RPE replenishes the necessary molecules for vision. With the RPE at the very back of the retina, these cells act as an absorptive layer to get rid of excess light. Without the RPE we would be blinded by ordinary sunlight. Also the absorption of excess light sharpens our vision. So the designer has a dilemma. Both the nerves and blood vessels must be in front of the rods and cones or the RPE must be in front because both must be in direct contact with the photoreceptor cells and they all won't fit and function together. Something will get between the light and the light sensitive cells. Putting the blood vessels and nerves in front of the rods and cones creates a very mild light filter, but does create a blind spot where the nerves bundle together. However, putting the RPE between the light and the rods and cones would create a much more detrimental filter and diffusing agent. The vertebrate eye is structured properly when all factors are considered.

“The vertebrate eye provides an excellent example of functional— though non-intuitive design. The design of the retina is responsible for its high acuity and sensitivity. It is simply untrue that the retina is demonstrably suboptimal, nor is it easy to conceive how it might be modified without significantly decreasing function.”[\[7\]](#)

As we have seen in this essay, evolution can offer some impressive evidences on first glance. But time and time again, the intricacies of design are in the details.

Notes

1. The story of whale evolution has indeed grown more sophisticated over the last 10-15 years. Indeed, this was one transition that many creationists had a great deal of fun

with. How could a land mammal evolve into a whale? How could the transitional forms possibly be functional on land or in water? If one were to scan the presumed transitional series (found on page 138 of *Evolution* by Carl Zimmer, Harper Collins, 2001) it is quite impressive evidence for evolution. The transitional series, while a little jerky with certain gaps remaining, appears gradual enough and the fossils seem to appear in the expected order and strata. But as always, the truth is in the details. Two recent articles investigate the evidence with some detail and rigor. Ashby Camp has written a fine summary (last modified March 11, 2002) and critique of the fossil evidence for whale evolution that is available from the TrueOrigins website at www.trueorigins.org/whales.asp. Also, John Woodmorappe has analyzed the mixture of characters in some of the whale-like fossils in his article "Walking whales, nested hierarchies, and chimeras: do they exist?" in *TJ* 16(1) 2002: 111-119. *TJ* was formerly *Creation Ex Nihilo: Technical Journal*.

What we learn from these articles is that the true land mammal ancestor of whales is still in dispute. The pakicetids, the first "intermediate," are true land mammals with a few potential aquatic features in their inner ears. The next group known as ambulocetids show some aquatic features but other features distance them from actual whale ancestors. Many of these are not in the proper stratigraphic position. The pakicetids and ambulocetids are all less than 10 feet long; the fully marine Basilosaurus are all over 50 feet in length. Even by evolutionary standards there isn't enough time between these species to evolve even this simple increase in length. None of the species depicted on page 138 of *Evolution* are thought to be actual ancestors of modern whales. The diagram is actually drawn to indicate this fact but most people looking at it won't come away with that impression. Each species is diagrammed as an offshoot of the lineage but not an actual transitional form. How come we always find just "types" of ancestors and never the ancestors themselves? Some character or another always disqualifies the intermediate in

question. There seems to be a deeper lesson here that most evolutionists are unwilling to face.

2. The documentation of human interference in the ecosystems of Hawaii and Thailand are summed up with a plea to slow down the rate of human induced extinction and allow nature to take its own more natural and easy-paced course. This implies, however, that humans are somehow outside the loop of nature. If we are just another biological species, then we are only acting according to our own biological nature. How or why should this be suppressed? As in past mass extinctions, the strong, opportunistic and lucky will survive. Perhaps that includes us, perhaps not. In the naturalistic worldview of the series, what's the difference? This is another example of stealthily applying a Christian worldview that gives intrinsic value to nature while maintaining the guise of naturalism. In a naturalistic worldview, nature just is. Choosing to interfere on nature's behalf indicates intrinsic value and worth that can only come from outside nature itself. In the Christian worldview, this comes from God.

3. David Crystal, *The Cambridge Encyclopedia of Language*, Second Edition, Cambridge: Cambridge University Press, 1997, p. 6,290.

4. www.reviewevolution.com, p. 92.

5. Ibid, p. 107.

6. www.pbs.org/wgbh/evolution/change/grand/, p. 1-6.

7. George Ayoub, On the design of the vertebrate retina, *Origins and Design*, Vol. 17(1): 19-22. This article can also be found on the web at www.arn.org/docs/odesign/od171/retina171.htm.

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Response to News Of First Human Clone

Today, December 27, 2002, it was announced that the first human clone was born at an undisclosed location. The announcement came from Brigitte Boisselier, the director of Clonaid, the research branch of the Raelian cult. Dr. Boisselier revealed that four other clones are expected by the end of January. The Raelians have been hinting for months that a successful cloned birth was expected. Two other independent researchers, Severino Antinori (an Italian working in an undisclosed Muslim country) and Panos Zavos (from Lexington, Kentucky) have also been hinting at human cloning success and suggesting that a birth will be announced soon.

As of yet there has been no independent verification that the baby girl, named Eve, is truly a clone. Eve was delivered by Caesarian section from her twin sister (the woman who donated the nuclear genetic material from which she was cloned also served as the surrogate mother). There is some reasonable doubt about either the information given the public at this time or the legitimacy of the claim. Dr. Boisselier claimed at the press conference this morning that ten clones were implanted (no information if the ten clones were of the same individual or clones from ten different people). Five of the clones spontaneously aborted within three weeks while the other five have continued without complication. This is a 50% success rate. Normal success rates in other mammals are 2% at best. Even then, many of the clones which survive to birth develop complications in their first months of life, as high as 10% in cattle. This incredibly high 50% success rate for human cloning leaves most researchers believing that either this isn't really a clone or they simply aren't revealing all

the other failures.

This announcement is no cause for rejoicing. This baby and the others to follow are human experiments with high odds to develop life-threatening complications. Not only that, but poor Eve, who I believe is a full human being with a soul, will be a research subject all her life, however long that is. Human cloning ought to be banned, both reproductive cloning and so-called therapeutic cloning—or as Stanford University recently referred to it, “human nuclear transplantation.” Boisselier, Antinori, and Zavos are forging ahead at breakneck speed with only a thin veneer of compassion for childless couples. They are deliberately putting innocent human life at risk both medically and psychologically for personal fame and notoriety. This needs to be condemned before others follow suit, and stopped if at all possible. The Senate needs to act now to join the House in banning all human cloning within U.S. borders.

Other articles of interest from the Probe Web site:

[Can Humans Be Cloned Like Sheep?](#)

[Cloning and Genetics: The Brave New World Closes In](#)

[Stem Cells and the Controversy Over Therapeutic Cloning](#)

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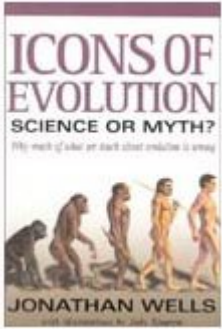
Icons of Evolution

Dr. Ray Bohlin reviews Jonathan Wells' book Icons of Evolution, which exposes the lies and distortions that constitute evolution's best textbook "evidence."



This article is also available in [Spanish](#).

Lies and Distortions Masquerading as Truth in the Halls of Science



Most everyone was required to take biology in high school, and many who went on to college likely took an introductory biology course as an elective, if not as a beginning course for a biology major. Required in most of these courses, mainly because of its inclusion in the textbook, was a section on evolution. Therefore, most people with a secondary education or above are familiar with the more popular evidences and examples of evolution nearly all textbooks have been using for decades. These include the peppered moth story of natural selection, Darwin's finches as an example of adaptive speciation, and the ubiquitous tree of life with its implied common ancestor to all life forms.

These familiar evidences of the creation story of our early 21st century culture are what Jonathan Wells (Ph.D., UC Berkeley, molecular and cell biology; Ph.D., Yale University, religious studies) refers to as the *Icons of Evolution* in his book by the same name (Regnery Publishing, 2000). Wells focuses on ten of these icons and meticulously exposes them to be false, fraudulent or at best, misleading. Many of these difficulties have been pointed out before and are known to a few, but Wells adds a level of sophistication and packages them in a form certain to get the attention of everyone in the educational establishment. This book is not a plea for creation in the schools or a selective and picky rant against trivial details. It is a frontal assault against some of the most cherished and revered "proofs" of the evolution story. There will be no shortage of controversy around this extensively researched and well-written exposé. If these "Icons" are the best evidence for evolution, or at least the

easiest evidence to explain, then one is left wondering what the future of evolutionary instruction could be. Even further, what future might there be for evolution itself?

Wells begins with an icon that itself starts at the beginning, the Miller-Urey experiment. This purports to show that molecules necessary for life could have arisen by simple chemical reactions on an early earth. The Miller-Urey experiment uses an atmosphere of reduced gases: ammonia, methane, water vapor, and hydrogen. Then it adds some energy in the form of sparks, and produces as Carl Sagan said, "the stuff of life." Dating back to 1953, this experiment has been around for nearly fifty years. The problem is that for at least the last twenty-five years origin of life researchers realized that this atmosphere does not reflect that of the early earth. Many textbooks will begrudgingly admit this, but include the experiment anyway. One can only guess the reason: no other simulated atmosphere works. I suppose that textbook writers would suggest that since we "know" some form of chemical evolution happened, they are justified in not representing the facts accurately!

Tree of Life, Homology, and Haeckel's Embryos

The tree of life is ubiquitous in evolutionary literature. The notion that all of life is descended from a single common ancestor billions of years ago is how many would define evolution. But the actual evidence argues strongly against any such single common ancestor, and most animal life forms appear suddenly without ancestors in what is known as the Cambrian explosion of nearly 543 million years ago in evolutionary time. The Cambrian documents life forms so divergent that one would predict a fossil record covering hundreds of millions of years just to document the many transitions required from the first multicellular animal ancestor. Current estimates suggest this change took place in less than 5-10 million years. Yet

the tree of life, documenting slow gradual changes, persists.

Another critical evidence for evolution over the years has been homologous structures. The forelimbs of all mammals, indeed all vertebrates, from bats to whales to horses to humans, possess the same basic bone structure. This is routinely held up as evidence of having descended from a common ancestor. The different forms simply tell of different adaptive stories, resulting in their unique functions relying on the same basic foundation. What becomes puzzling is, first, a confusion of definitions. *Homology* is **defined** as structures having arisen from a common ancestor.^{1} But then homology cannot be used as an evidence of evolution. Something is very wrong, yet textbook orthodoxy concerning homology continues to perpetuate a myth that has been exposed for decades. Second, supposed homologous structures do not necessarily arise through common developmental pathways or similar genes.

Next, Wells turns his attention to perhaps the most inexcusable icon of all: similarities in vertebrate embryos originally pointed out by Ernst Haeckel in the 19th century and used by Darwin in *The Origin of Species* as a powerful evidence for common descent. Haeckel's vertebrate embryos are shown passing through a remarkably similar stage early in development and only later diverging to the specific form. This passage through a common form early in development was seen as obvious evidence for a "community of descent." Yet, once again, the evidence gets in the way.

Since before the dawn of the 20th century, embryologists have known that Haeckel misrepresented the evidence. Vertebrate embryos never pass through a similar stage. What's more, Haeckel left out the fact that the earlier stages of embryonic development between classes of vertebrates pass through remarkably different pathways to arrive at this supposedly similar intermediate stage. The fraud was recently "rediscovered," though most embryologists have been aware of the inaccuracy all along. This shows the longevity of even

falsified evidence, due to its persuasive appeal even in the hallowed halls of science. Perhaps scientists are human after all, seduced by a fraud simply because it makes such a good case for a treasured theory.

The Peppered Moth

Probably the granddaddy of all the icons of evolution is the peppered moth story. In pre-industrial England, the peppered moth was common in entomologists' collections. By the 1840s a dark or melanic form was increasing in frequency in populations across England. By 1900 the melanic form comprised as much as ninety percent of some populations. In the 1950s experiments by Bernard Kettlewell clearly established that this change in frequency from a peppered variety to a dark variety was due to two factors.

First, the surface of tree trunks had changed from splotchy, lichen-covered patchwork, to a uniform, dark complexion, due to increased levels of pollution. The pollution killed the lichens and covered the tree trunks with soot. Second, the peppered variety was camouflaged from predation by birds on the lichen-covered tree trunks, and the melanic variety was camouflaged on the dark tree trunk. Therefore, the switch from peppered variety to melanic variety was due to natural selection, acting through selective bird predation as the trees changed from lichen-covered bark to soot-covered bark. Then with stricter air quality standards, the lichens are returning and the peppered variety is predictably coming back strong.

The peppered moth story became legendary as a classic example of Darwinian natural selection. But within 20 years of Kettlewell's work, cracks began to appear. It was soon noted that the characteristic switch from the peppered form to the dark form happened in areas where the lichens still grew on tree trunks. In other areas, the dark form began to decrease before the lichens began returning on trees. A similar pattern

of a switch from a light form to a dark form was observed in ladybird beetles. Birds don't like ladybird beetles. Therefore, predation is ruled out as the selector. It all began to unravel when it was observed that peppered moths of both varieties **never** rest on tree trunks!

Essentially all photographs of moths on the trunks of trees were staged using dead or sluggish moths. They are not active during daylight. If that were the case, how could birds find them on tree trunks at all? Kettlewell released his moths in his mark-recapture-predation experiments in daylight hours, when the moths are naturally inactive. They simply found the nearest resting place (tree trunks in their sluggish state), and the birds gobbled up the non-camouflaged moths. We still don't know exactly where moths rest or whether lichens play any significant role in the story. Yet many biologists insist that the traditional story makes a good example of evolution in action. "To communicate the complexities would only confuse students," they say. Once again, flawed, yet cherished, examples persist because they are just too good **not** to be true!

Birds, Dinosaurs, Fruit Flies, and Human Evolution

The reptile-like bird, Archaeopteryx, has long been heralded as a classic example of a true ancestral transitional form. The improbable change from reptile to bird has been preserved in snapshot form in this remarkable fossil from Germany. Possessing a beautifully preserved reptilian skeleton with wings and feathers, Archaeopteryx was a paleontologist's dream. This would certainly explain why Archaeopteryx has found its way into just about every textbook. But Archaeopteryx has fallen on hard times. As happens with so many perceived transitions, it is universally viewed now as just an extinct bird, an early offshoot of the real ancestor.

Surprisingly, bird-like dinosaurs from much later geologic periods are hailed as the real ancestors. This is based on structural similarities despite their existence after Archaeopteryx. Never mind that the child exists before the parent. So enamored are some, that birds are just today's feathered dinosaurs. *National Geographic* was recently caught red-faced by perpetrating a fraudulent dinosaur/bird fossil as the real thing in its pages. Scientists have even accepted molecular evidence indicating an *identical* match between turkey DNA and Triceratops DNA. Never mind that the identical DNA match is more likely the result of contamination from a turkey sandwich in the lab and that Triceratops is in the wrong dinosaur family for bird evolution. Such is the power of *wanting* to believe your theory is true.

In the next four chapters, Wells visits the familiar icons of Darwin's finches, fossil horses, mutant four-winged fruit flies, and the ultimate icon, diagrams of the progressive change from ape-like creatures to full human beings. Like the others above, these icons turn out to be far less than what the textbooks suggest. In each case, as in the six discussed above, there are plenty of experts willing to expose the lack of evidence for each icon. But they remain staples in the arsenal of evidences of the evolutionary process. Fossil horses and human evolution turn out also to be indicators of the difficulty evolution has in separating philosophical preferences from conclusions drawn from the evidence.

Textbook writers are either ignorant of current data, which prompts one to be skeptical of the accuracy of the rest of the textbook, or they are willfully misrepresenting the evidence in order to present a united front on the factualness of evolution. Unfortunately for our children, Wells is able to provide direct quotes indicating that at least some see no problem with including misleading or false data in order to make a point. After all, we know evolution is true, so just

because we don't have easy simple stories to tell, doesn't mean they aren't out there waiting to be discovered.

The Scientific Academia Reacts

The reasoning behind these *Icons of Evolution* exposes much of the standard story of evolutionary theory to be mythology rather than science. And if these ten icons have been viewed as the best evidence for evolution, the entire theory needs to be questioned and made accountable to the evidence. It will be interesting to watch the evolutionary community react to these revelations. Evolutionary propagandist Eugenie Scott has already reportedly predicted that the book will be a "royal pain in the fanny" for biology teachers. Will the scientific community be able to respond with an appropriate *mea culpa*, or will there be a battery of excuses and obfuscations? I predict the latter. In the last ten years, the evolutionary establishment has been exerting a great deal of effort to demonstrate that evolution is confirmed to such a degree as to be beyond rational dissent. Organizations such as the National Academy of Sciences, the National Association of Biology Teachers, and the National Center for Science Education have lobbied long and hard for the scientific integrity of the standard evolutionary story. They have held up most, if not all, of these ten icons as the principal pillars of the unassailable evidence for evolution.

Evolution is the principal foundation of the naturalistic world view, presented by many in academia as the only scientific, and therefore, objective, view of reality. Without evolution, metaphysical naturalism cannot stand. As Richard Dawkins has said, Darwin made it possible to be an intellectually fulfilled atheist.^{2} Without evolution, the naturalistic worldview is in serious trouble. Therefore, the scientific community can be expected to rally fiercely behind the evolution story. Just how they do it will prove interesting indeed. *Icons of Evolution* will help draw the

evolutionary establishment out from behind the protective bulwark of its authority and force it to defend its theory on the basis of the evidence. This is a fight I believe it must eventually lose in the court of scientific and public opinion.

There are two minor, yet unfortunate, problems with the text. The first, actually a book design problem, regards the difficulty finding the legends for some figures and distinguishing them from the regular text. The second involves an unnecessarily inflammatory discussion of the monetary support evolution receives from the U.S. tax-supported National Institutes of Health and National Science Foundation. While Wells' discussion is accurate, it comes across as sour grapes and may provide a convenient target for evolutionary propagandists to dismiss the book without dealing with the evidence.

These problems aside, *Icons of Evolution* is a landmark work and deserves to be read and studied by all who have an interest in the controversy surrounding not only the teaching of evolution, but also the very theory of evolution itself.

Notes

1. "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. . . ." Simon Conway Morris, *Crucible of Creation*, (Oxford: Oxford University Press) 1998, p. 31.

2. Richard Dawkins, *The Blind Watchmaker*, New York, NY: W. W. Norton, 1986, p. 6.