

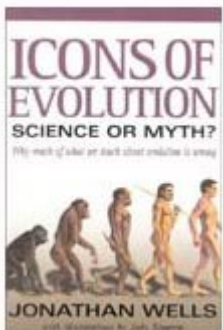
Icons of Evolution

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.

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“Where DID Cain Get His Wife?”

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That’s a long standing question that unfortunately, most commentaries don’t offer much help answering. I assume a literal Adam and Eve as the first humans. Therefore for several generations the family tree has only one trunk. Seth and Cain could only have married daughters of Adam and Eve, their sisters.

That always causes some severe consternation. Francis Collins, an evangelical Christian and the new head of NIH, has written that that solution goes against numerous Old Testament laws. How could the God of the Bible allow for such things? Collins opts for an evolved human race and a figurative Adam and Eve. He also seems to think, though he doesn’t explain, that Cain marrying his sister goes against the plain reading of the text.

The main societal taboo against incest is a practical one since offspring from these unions, even among distant cousins, carry an increased risk of birth defects. This is a well-known result of what geneticists call inbreeding. BUT Adam and Eve were completely without genetic mutation, the source of inbreeding birth defects. Therefore there was no biological risk from sister/brother marriages.

In the time of Abraham, Isaac, and Jacob, it was still the practice of marrying within one's family, at least twenty generations after Adam and Eve if you assume no extra generations in the genealogies of Genesis 5 and 11.

In Genesis 20:12 Abraham tells Abimelech that he was not completely lying when he told Abimelech that Sarah was his sister; "Besides, she really is my sister, the daughter of my father though not of my mother." Sarah was Abraham's half-sister.

When Isaac needed a wife, Abraham tells his servant to go to his country and even his own family to find a suitable wife for Isaac (Genesis 24:4). Genesis 24:15 tells us that Rebekah was the daughter of Bethuel, who is the son of Nahor, Abraham's brother.

Isaac then tells Jacob to seek a wife from the daughters of Laban, Rebekah's brother. (Genesis 28:2). So Jacob married two of his first cousins, Leah and Rachel.

Before the Law of Moses, these kinds of unions were the norm. But over 400 years later, mutations have accumulated in all populations and such marriages are quite risky. Therefore, I think, that is why you read in Leviticus 20:17 that if you marry your sister who is either the daughter of your father or the daughter of your mother (thus including half-siblings) they shall be cut off. So a marriage like Abraham and Sarah's was specifically outlawed in the Law of Moses. I think times have changed and the offspring of these once-normal arrangements are at significant risk.

Also, there still may have been a reticence to marry a brother or sister with whom one grows up. But when you realize that Seth was born when Adam was 130 years old, certainly there were many more children between Cain and Abel, and Seth. Therefore Cain very conceivably could have married a sister who was twenty or thirty years younger than he was, and

therefore they did not grow up together, so there wasn't the same degree of familiarity as with a same-age sibling.

Bottom-line, I find no difficulty either theologically or biologically with Cain and Seth marrying their sisters. Marrying within the family remained the normal practice for over twenty generations.

Respectfully,

Ray Bohlin
Probe Ministries

Global Warming

Fossil fuel emissions are unfairly being blamed for global warming. The Kyoto Protocol is based on questionable science, and will cause unnecessary economic hardship.

What is Global Warming?

Over the last few months, dating back to the 2000 election, we have been bombarded with the news of global warming. Unfortunately, this issue has become highly polarized politically. Some scientists and politicians believe the warming has been fully documented as being caused by human interference and drastic measures are necessary to bring it under control, while others just as strenuously maintain that nothing has been proven and drastic measures will only ruin our economy for no reason. What are we to think?

First, let me say at the start of this article that I have been what some would call an environmentalist since high school. I cooperate fully with the recycling program offered by my city: collecting all newspaper, glass, aluminum cans,

and certain plastics for pick-up every other week. I don't buy Styrofoam plates or cups since it is not reusable or biodegradable.

I have long been a nature enthusiast, previously as an avid bird-watcher and feeder. Zoos have always been an attraction for me, but even better are opportunities to see God's creatures in their natural habitat. A jog in the woods is more preferable to a run down the street, even with no traffic.

I drive a small fuel-efficient car and as soon as it is practicable for my family financially, I intend to purchase one of those new cars run by both battery and gasoline, which gets close to 60 miles to the gallon.

I think stewardship of God's creation is a good thing and I think we (meaning humans) have often sought our own needs to the unnecessary detriment of the rest of creation. So with this as a background, what do I think of global warming? I'm afraid that my position will not totally satisfy either of the extremes mentioned earlier. For I don't think global warming requires the drastic action being required by the United Nations' Intergovernmental Panel on Climate Change (IPCC). But neither do I believe that the signs of global warming can be totally ignored, as some economists and political conservatives would have us think.

For instance, it does seem that there is credible evidence that both Arctic and Antarctic ice is receding, most glaciers worldwide appear to be in retreat, and sea levels are rising. The important question, however, is whether global warming is responsible for these events. And perhaps even more importantly, what can we realistically do about it even if rising global temperatures are even partly responsible for these disturbing trends?

In this article I will be examining the evidence for a human component to the increasing temperatures and whether the

proposed remedies offered by the IPCC are the best means of effecting real change for the future.

Global Warming and the Kyoto Protocol

The issue of global warming has become a lightning rod issue the world over. When President Bush recently indicated that he would hold back on setting carbon dioxide limits for U.S. power plants, environmentalist groups around the world immediately demonized him. A campaign was put in motion to flood the White House with e-mails condemning his action.

To help understand this issue let's investigate the basics of the greenhouse effect on our planet and see what the fuss is all about. The greenhouse effect simply refers to the ability of some gases in our atmosphere to absorb and hold heat better than others. This creates a warming blanket around the earth without which life would be much more difficult for all life forms on earth.

It's similar to the effect produced by actual greenhouses with walls and ceilings of glass. Glass allows certain wavelengths of light and radiation in, but traps certain others from getting out. Leave your car in the full sun, even on a pleasant day, and you can later enter the car to blast furnace temperatures. That's a greenhouse effect.

Of great concern today is the fact that some greenhouse gases, such as carbon dioxide, are increasing in the atmosphere and the average temperature of the earth at ground level has increased by about a full degree Fahrenheit since 1900 (0.5 degrees Celsius). Many have become convinced that the increase in carbon dioxide and the increase in temperature are cause and effect respectively.

Further, many believe that the increased carbon dioxide is due to the burning of fossil fuels. Some global climate computer models predict that this is only the beginning of the rise of

global temperatures and that by the end of the 21st century, average global temperatures could rise by as much as seven degrees Fahrenheit (3.5 degrees Celsius). As a result, the United Nations Framework Convention on Climate Change, based on the work of the Intergovernmental Panel on Climate Change, issued the Kyoto Protocol in December of 1997.

Simply put, the Kyoto protocol calls on all agreeing nations to reduce their fossil fuel emission by at least five percent below their estimated 1990 levels by around 2010. Most nations were actually assigned reductions of 7-8 percent, including the United States. Now that doesn't sound like much at first glance. However, it is widely recognized, that with the growth in the U.S. economy since 1990, this would amount to as much as a 30 percent actual reduction in fossil fuel use by 2010. To achieve such a drastic reduction would require major shifts in U.S. energy policy and the economy. We'd better make sure it's worth it.

Next we'll look at the science of global warming.

Scientific Problems with Global Warming

Now I want to discuss some of the problems with the scientific evidence that purports to show that human produced carbon dioxide is responsible for global warming.[\[1\]](#) As I mentioned earlier, levels of carbon dioxide are increasing in the atmosphere and ground stations have reported a slight warming in this century. Many believe that the increase in carbon dioxide has caused the slight rise in temperature, and they fear this is only the modest beginning of more significant temperature increases in the 21st century. I think there are several reasons to strongly doubt this conclusion.

First, we need to consider the influence of long-term trends. The last ice age ended about 11,000 years ago by most estimates, and the planet has been warming ever since. Sea levels have been rising at the rate of 7-8 inches every 100

years. Therefore, the fact that sea levels are rising is not necessarily due to humanly caused global warming. There was a significant warming trend from around 900 A.D. to 1300 A.D. Greenland was actually green on its coasts at one time. This was followed by what is referred to as the "Little Ice Age" from about 1450 to 1850. Both of these trends occurred without human influence and the current warming trend could just be stabilization from this last Little Ice Age.

I have mentioned that the warming trend has been measured from ground stations. This distinction has been added because there is conflicting data from weather balloon and satellite data. The most significant warming has been measured in the last two decades. However the temperature of the atmosphere has remained constant over the last twenty years.

How can the ground temperatures increase and the atmospheric temperatures stay the same? To be honest, nobody really knows for sure, but there is evidence that the ground based temperatures are in error. This could be due to what is called the heat island effect. It has been noticed that urban measured temperatures have increased faster than rural temperatures. The concrete, asphalt, factories, motor vehicles, and population density of large cities may be biasing these readings and giving a false warming trend.

If the warming trend is real, there may be another significant factor involved that has nothing to do with human interference: the sun. A measurement of solar activity in terms of the sunspot cycle length shows a strong correlation with global temperatures over the last 100 years: including the rise from 1920-1940, the dip from 1940 to 1980, and the rise over the last twenty years.

All these data seem to indicate that global warming, if it exists, is not likely to be due to human action.

The Economic Effects of the Kyoto Protocol

Knowing that the science is highly questionable raises severe concerns about the Kyoto Protocol, which calls for at least a 30 percent reduction in U.S. fossil fuel use by 2010. Not only is this drastic reduction unnecessary to combat global warming, but also its effects on the U.S. economy could be catastrophic.

First, let me point out that some warming is not such a bad thing. It is widely recognized that increased carbon dioxide is good for plants. They grow faster and require less water. A slightly longer growing season is not a negative either. It is simply not factual to suggest that global warming is responsible for increases in severe weather, including hurricanes, tornados, floods, and droughts. Storms, in particular, have not shown any real increase in frequency or intensity.

John Christy, professor of atmospheric science at the University of Alabama and one of the lead authors of the IPCC report, said, "Hurricanes are not increasing. Tornados are not increasing. Storms and droughts do not show any pattern of increasing or decreasing Variations of climate have always occurred, even when humans could not have had any impact." [\[2\]](#)

Beyond these observations is the realization that the implementation of the Kyoto Protocol would have severe economic consequences. Our own U.S. Energy Information Administration (EIA) says Kyoto could drain more than \$340 billion a year from the U.S. economy (\$1,500 per person), double electricity prices, and cause the price per gallon to soar 65 cents for gasoline, 88 cents for diesel, and 90 cents for home heating oil. What is most significant about these rises in energy prices is that they would affect low-income

families most severely. Upper and middle-income families can better shift resources to meet rising energy costs than the poor or the elderly on fixed incomes. Yet no one has talked about this.

The EIA also calculates that the Kyoto treaty could cost 3.2 million American jobs. An exhaustive study commissioned by a coalition of minority business groups concluded that 1.4 million of those lost jobs would be in our Black and Hispanic communities. And average annual family incomes in those communities would decline by between \$2,000 and \$3,000 under Kyoto.[\[3\]](#)

What is most disconcerting is that all this economic impact would be essentially for nothing, because not only is the science of human caused global warming suspect, but even if the Kyoto Protocol is followed, it would result in less than one-half of one degree reduction in global temperature by 2050. It hardly seems worth it.

So What Do We Do?

After exploring the question of global warming, we've found the science behind it to be questionable at best and the economic impact unnecessarily severe, particularly for minority families and businesses. This may raise a question in some people's minds as to why this is being pushed so uncritically by other world governments and by the media.

Well, the first clue comes from a quick perusal down the list of nations from the Kyoto Protocol itself. Some countries like the Russian Federation are simply asked to hold their emissions at 1990 levels with no reduction. Countries from Latin America, Asia, Africa, and Polynesia, including China and India aren't even on the list (except Japan)! The reason is that these countries are still developing their economies and will need unrestricted energy use. However, as these populous nations grow economically, they may well exceed the

emissions output of western nations altogether.

Implicitly, this affirms the necessity of fossil fuel energy for healthy economies. This treaty may be little more than a tax on western nations, not a policy for climate change. The late Aaron Wildavsky, professor of political science at UC Berkeley, wrote, "Warming (and warming alone), through its primary antidote of withdrawing carbon from production and consumption, is capable of realizing the environmentalist's dream of an egalitarian society based on the rejection of economic growth in favor of smaller population's eating lower on the food chain, consuming a lot less, and sharing a much lower level of resources much more equally."[\[4\]](#)

Now I don't think all those things are bad in and of themselves. But I don't like the idea of being forced into it in the name of avoiding climate change. A recent *Time* cover story, apart from a wholly typical and irresponsible scare article promoting the myth of human induced global warming, actually provided some common sense activities for responsible environmental activities that save resources and money.[\[5\]](#)

Among them were: running your dishwasher only when it's full, replacing air-conditioning and furnace air filters regularly, and adjusting your thermostat to a little warmer in summer and a little cooler in winter. You can also set your water heater to no higher than 120 degrees (F); it saves money and is safer. Try low-flow showerheads to use less hot water and wash clothes in warm or cold water. Most detergents today clean just as well in cooler temperatures. Use energy efficient light bulbs. Improve your home insulation. And seal up all the cracks.

Since all of these save electricity, they save not only resources, but also money for you. It just makes sense.

Increased energy prices, which should occur as demand for oil and gas increases and supply remains steady temporarily but

begins to drop in 20 to 40 years, will spur development for more renewal energy sources such as solar, wind, and geothermal power. Also, research is progressing in stimulating the ocean to be more biologically productive through seeding with iron to act as a sink for carbon dioxide, if levels are shown to be affecting the general climate.

But where is the voice of the church? For too long we have been silent on environmental issues. As Christians we should lead the way in care for the environment, since we claim to be rightly related to its Creator in the first place.

Notes

1. S. Fred Singer, 1997, 1999, "The Scientific Case Against the Global Climate Treaty," <http://www.sepp.org/GWbooklet/withfigures.html>. All of the scientific evidences in this section can be found in this fair and reasoned report. Singer is a retired climatologist from the University of Virginia and has formed The Science and Environmental Policy Project (SEPP) to help educate the public on global warming. This website is a great resource for up-to-date information on the global warming controversy. The report above is available with and without figures, but I reference and recommend the version with the figures copied with permission from peer-reviewed science journals for the full effect.
2. Quoted by James K. Glassman, in "Administration in the Balance," March 8, 2001, *Wall Street Journal*.
3. Paul Driessen, 2000, "Navigating the Treacherous 'Seven Cees' of Climate Care," The Issue Archive of CFACT (Committee for a Constructive Tomorrow) at <http://www.cfact.org/Issues.htm>.
4. Quoted by James K. Glassman, in "Administration in the Balance," March 8, 2001, *Wall Street Journal*.
5. "What Can You Do?" *Time*, April 9, 2001, p. 39.

The Controversy Over Stem Cell Research

What Are Stem Cells and Why Are They Important?

President Bush recently decided to allow the use of federal funds to research the therapeutic properties of privately produced human embryonic stem cells (ES). President Bush clearly maintained the prohibited use of federal monies to produce human ES cells, since the procedure requires the destruction of the embryo to obtain them, which is currently prohibited by federal law. To fully understand the ramifications of this decision, I will discuss the nature of stem cells and their potential to treat disease.

Most of the more than one trillion cells that form the tissues of our bodies possess a limited potential to reproduce. If you remove some live human skin cells, they may divide in culture (laboratory conditions) five or six times and then die. Special cells in the underlying skin layers are what produce new skin cells. These cells' sole function is to churn out replacement cells. These are known as stem cells. Most tissues of our bodies possess stem cells that can reproduce the different cells required in that tissue. Bone marrow stem cells can produce the many different cells of the blood. They are called stem cells, since they are seen as the stem of a plant that produces all the "branches and leaves" of that tissue.

What I've described is referred to as adult stem cells. There is no controversy revolving around the use of human adult stem cells in research, since they can be retrieved from the individual requiring the therapy. The promise of adult stem cells has increased dramatically in recent years. Stem cells have even been found in tissues previously thought to be devoid of them, such as neural tissue. It has recently been shown that certain types of stem cells are not limited to producing cells for the tissue in which they reside. For instance, bone marrow stem cells can produce skeletal muscle, neural, cardiac muscle, and liver cells. Bone marrow stem cells can even migrate to these tissues via the circulatory system in response to tissue damage and begin producing cells of the appropriate tissue type.[\[1\]](#)

In addition to the advantages of previously unknown adult stem cells and their unexpected ability to produce numerous types of cells, adult stem cells carry the added potential of not causing any immune complications. Conceivably adult stem cells could be harvested from the individual needing the therapy, grown in culture to increase their number, and then be reinserted back into the same individual. This means the treatment could be carried out with the patient's own cells, virtually eliminating any rejection problems. Adult stem cells may also be easier to control since they already possess the ability to produce the needed cells simply by being placed in the vicinity of the damaged tissue.

Human Embryonic Stem Cells

The advances in adult stem cell research has only come about in the last three years. Traditionally it was thought that ES cells carried the greatest potential to treat wide-ranging degenerative diseases such as diabetes, Parkinson's, multiple sclerosis, spinal chord injuries, and Alzheimer's. Since ES cells derive from the inner cell mass of the early embryo (5-7 day old blastocyst), they are capable of forming all the

tissues of the body. Therefore, researchers have long felt that human ES cells hold the greatest potential for treatment of degenerative diseases.

While the potential has always existed, the problem has been that in order to obtain these human ES cells, the embryo is destroyed during the harvesting procedure. In addition, while ES cells had been obtained and grown successfully in culture from several mammals, including mice, efforts at producing ES cells from other mammals had failed. Nobody was sure human ES cells could even be successfully produced until November 1998 when James Thomson from the University of Wisconsin announced the establishment of five independent human ES cell lines.[{2}](#) (A cell line is a population of cells grown from a single cell that has been manipulated to continue growing indefinitely in culture, while maintaining its cellular integrity.) Geron Corporation funded Thomson's work, so it did not violate the federal ban on government funds being used for such purposes. But his announcement immediately opened up a desire by federally funded researchers to use his already established human ES cells.

But there are potential problems and uncertainties in both adult and ES cells. While the ethical difficulties are non-existent for adult stem cells, they may not prove as helpful as ES cells. ES cells have the potential for universal application, but this may not be realized. As stated earlier, establishing ES cell lines requires destruction of human embryos. An ethical quagmire is unavoidable.

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Stem Cells and the Controversy Over Therapeutic Cloning

Dr. Ray Bohlin explains stem cells and where they come from, insisting the potential of stem cell therapy must be weighed against the personhood of the embryo.

What Are Stem Cells and Why Are They Important?

President Bush recently decided to allow the use of federal funds to research the therapeutic properties of privately produced human embryonic stem cells (ES). President Bush clearly maintained the prohibited use of federal monies to produce human ES cells, since the procedure requires the destruction of the embryo to obtain them, which is currently prohibited by federal law. To fully understand the ramifications of this decision, I will discuss the nature of stem cells and their potential to treat disease.

Most of the more than one trillion cells that form the tissues

of our bodies possess a limited potential to reproduce. If you remove some live human skin cells, they may divide in culture (laboratory conditions) five or six times and then die. Special cells in the underlying skin layers are what produce new skin cells. These cells' sole function is to churn out replacement cells. These are known as stem cells. Most tissues of our bodies possess stem cells that can reproduce the different cells required in that tissue. Bone marrow stem cells can produce the many different cells of the blood. They are called stem cells, since they are seen as the stem of a plant that produces all the "branches and leaves" of that tissue.

What I've described is referred to as adult stem cells. There is no controversy revolving around the use of human adult stem cells in research, since they can be retrieved from the individual requiring the therapy. The promise of adult stem cells has increased dramatically in recent years. Stem cells have even been found in tissues previously thought to be devoid of them, such as neural tissue. It has recently been shown that certain types of stem cells are not limited to producing cells for the tissue in which they reside. For instance, bone marrow stem cells can produce skeletal muscle, neural, cardiac muscle, and liver cells. Bone marrow stem cells can even migrate to these tissues via the circulatory system in response to tissue damage and begin producing cells of the appropriate tissue type.[\[1\]](#)

In addition to the advantages of previously unknown adult stem cells and their unexpected ability to produce numerous types of cells, adult stem cells carry the added potential of not causing any immune complications. Conceivably adult stem cells could be harvested from the individual needing the therapy, grown in culture to increase their number, and then be reinserted back into the same individual. This means the treatment could be carried out with the patient's own cells, virtually eliminating any rejection problems. Adult stem cells

may also be easier to control since they already possess the ability to produce the needed cells simply by being placed in the vicinity of the damaged tissue.

Human Embryonic Stem Cells

The advances in adult stem cell research has only come about in the last three years. Traditionally it was thought that ES cells carried the greatest potential to treat wide-ranging degenerative diseases such as diabetes, Parkinson's, multiple sclerosis, spinal chord injuries, and Alzheimer's. Since ES cells derive from the inner cell mass of the early embryo (5-7 day old blastocyst), they are capable of forming all the tissues of the body. Therefore, researchers have long felt that human ES cells hold the greatest potential for treatment of degenerative diseases.

While the potential has always existed, the problem has been that in order to obtain these human ES cells, the embryo is destroyed during the harvesting procedure. In addition, while ES cells had been obtained and grown successfully in culture from several mammals, including mice, efforts at producing ES cells from other mammals had failed. Nobody was sure human ES cells could even be successfully produced until November 1998 when James Thomson from the University of Wisconsin announced the establishment of five independent human ES cell lines.[\[2\]](#) (A cell line is a population of cells grown from a single cell that has been manipulated to continue growing indefinitely in culture, while maintaining its cellular integrity.) Geron Corporation funded Thomson's work, so it did not violate the federal ban on government funds being used for such purposes. But his announcement immediately opened up a desire by federally funded researchers to use his already established human ES cells.

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Human Genome Project

Dr. Ray Bohlin takes a brief look at the accomplishment, purpose and consequence of the Human Genome Project.



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

What's All the Fuss About the Human Genome Project?

In February of 2001, virtually every media outlet, whether TV

news, newspapers, radio, Internet news services, or news magazines, was all worked up about the announcement of the completion of the Human Genome Project. In this article we will explore this monumental achievement and what it means for the future of medicine and our understanding of ourselves.

To appreciate this important accomplishment, we need to review a little basic genetics. It may actually astonish most adults just how much genetics the National Institutes of Health assumes we know about our genetic heritage. The educational video from the HGP includes a three-minute review of basic genetic processes like DNA packaging, transcription of DNA into message RNA, and the translation of message RNA into protein. It's no exaggeration to say that when I played this short piece during a lecture for high school students and their parents, mom and dad were left in the dust.

Honestly, I did that intentionally; because we are only in the beginning stages of a genetic revolution that will transform the way we diagnose and treat disease and how we may even alter our genetic structure. These new technologies bring with them numerous ethical and moral dilemmas we have only begun to address and for which there may not be simple answers. If we don't take the time to familiarize ourselves with genetic research and its implications, we risk responding out of fear and ignorance and potentially throwing away crucial medical advances.

I have contended for a long time that we can no longer afford to remain ignorant of genetic technologies. They simply harbor far too great a power for both tremendous good and tremendous evil. We must work hard to take every thought captive to Christ and see what there is of benefit and what avenues of research and application we need to avoid to preserve human freedom and dignity.

Well let's talk about our genome, the sum total of all our genes. In most of the 100 trillion cells of our body are 46

chromosomes. These chromosomes are tightly coiled and packed strings of a remarkable molecule called DNA (Deoxyribonucleic Acid). DNA is a polymer, a repetitive sequence of four molecules, which I will only refer to by their one-letter abbreviations, A, G, C, and T. The human genome sequence is simply the sequence of these four molecules in DNA from all our chromosomes. If you laid out the DNA from all our chromosomes in each of our cells end to end, it would stretch six feet long.

A gene is a segment of DNA that contains the precise coding sequence for a protein. And proteins do all the real work in our cells. By looking at our completed sequence, it is predicted that our genome consists of 30,000 to 45,000 genes in each of our cells. So, now that we have the sequence, what does it mean? We'll begin answering that question in the next section.

What Does the Human Genome Project Hope to Accomplish?

The National Institutes of Health in cooperation with several international research organizations began the HGP in 1990 in the U.S. There were four primary objectives among the many goals of the HGP^[1].

The first and primary goal of the HGP was to map and sequence the entire human genome. There is a critical and significant difference between a map and the sequence. There are over three billion letters, or base pairs, in the human genome, spread out over 23 pairs of chromosomes. Trying to locate a sequence of say 1,000 letters, the code for a large protein, is a one in a million task. Therefore, researchers needed a refined roadmap to the genome. The map entails particular sequences that can be used like signs on a road map. If the trait a scientist is studying always seems to be present with this marker, the gene involved is probably nearby. In 1995, a

detailed map was published with over 15,000 markers, one for every 200,000 base pairs. This will aid greatly in associating genes with particular diseases. And now with the sequence nearly complete, with over 99% accuracy, determining the precise effect of this gene on disease will be even easier.

A second critical goal was to map and sequence the genomes of several important model organisms: specifically, the bacterium *E. coli*, yeast, the roundworm, fruit fly, and mouse. This information is helpful, because each of these organisms have been used for laboratory studies for decades. Being able to coordinate knowledge of their genomes with cellular and biological processes will certainly inform our study of the human genome and its various functions.

The third important objective of the HGP was to systemize and distribute the information it gathered. Any sequence over 2,000 base pairs is released within 24 hours. The sequence and map data is contained in publicly accessible databases on the Internet. The HGP has also been creating software and other tools for large-scale DNA analysis.

The fourth and final primary goal of the HGP was to study the ethical, legal, and social implications of genetic research. A full 5% of all funds appropriated for the HGP have been earmarked for these kinds of considerations. There are many concerns revolving around the use of genetic sequence data. Not the least of which are worries about ownership, patenting, access to personal sequence data by insurance companies, potential for job discrimination based on personal sequence data, and the prospects for genetic screening, therapy, and engineering. In the next section we'll begin investigating how the HGP thinks this information can be used.

What are the Long Term Hopes for the HGP?

The completion of the sequence was announced jointly in February 2001 in the journals *Nature*[\[2\]](#) and *Science*[\[3\]](#). Both

Science and *Nature* have made these landmark issues available, without subscription, on their websites.

The importance of recognizing the sequence of a particular gene has three important ramifications.[\[4\]](#) The first is diagnosis. Over the last few years, single genes have been found leading to deafness and epilepsy. Numerous genes, however, will influence most diseases in complex ways. Recently, genetic influences have been found in many forms of hypertension, diabetes, obesity, heart disease, and arteriosclerosis[\[5\]](#). Genetic analysis of cancer tumors may someday help determine the most effective drug therapy with the fewest side effects. Genetic diagnosis has the potential to more precisely prescribe treatments for many medical conditions.

Second, diagnosing ailments with more precision with genetics will also lead to more reliable predictions about the course of a disease. Genetic information about an individual's cholesterol chemistry will aid in predicting the course of potential heart disease. Obtaining a genetic fingerprint of a cancerous tumor will provide information concerning its degree of malignancy. Third, more precise genetic information will also lead to the development of better strategies for prevention of disease.

Many more ailments in newborns can eventually be screened more specifically to avoid disorders later in life. Currently, babies in the U.S. and other countries are routinely screened for PKU, a metabolic disorder that prevents the breakdown of a specific amino acid found in proteins. This condition becomes toxic to the nervous system, but can be prevented and managed with appropriate diet. Without dietary changes, affected babies face extreme mental retardation. Hopefully, the number of conditions this type of screening applies to can be expanded.

Screening can also be done for adults, to see if they may be

carriers of potential genetic conditions. Certain Jewish and Canadian populations regularly obtain voluntary screening for Tay-Sachs disease, a known child-killer. This information has been used to help make decisions about future marriage partners.

Perhaps the greatest benefit will come from what is called gene-based therapy. Understanding the molecular workings of genes and the proteins they encode will lead to more precise drug treatments. The more precise the drug treatment, the fewer and milder will be the side effects.

Actual gene therapy, replacing a defective gene with its normal counterpart, is still very experimental. There are still many hurdles to overcome involving how to deliver the gene to the proper cells, controlling where that gene is inserted into a chromosome, and how it is activated.

Not surprisingly, some have seen the human genome sequence as a vindication of Darwin. We'll examine that contention next.

Did the Human Genome Sequence Vindicate Darwin?

Amid the controversy and exultation over the release of the near complete human genome sequence has been a not so quiet triumphal howling from evolutionary biologists. The similarity of many genes across boundaries of species, the seemingly messy patchwork nature of the genome, and the presence of numerous apparently useless repetitive and copied sequences all have been laid out for us as clear validations of evolution. Really!

If Darwin were alive today, he would be astounded and humbled by what we now understand about the human genome and the genomes of other organisms.

Let's take a closer look at the claims of one bioethicist,

Arthur Caplan^[6], who thought the major news story was missed. So let's just pick a few of the more glaring statements to help us understand that little in his comments should be trusted.

First, Caplan says, "Eric Lander of the Whitehead Institute in Cambridge, Mass., said that if you look at our genome it is clear that evolution must make new genes from old parts."

While it may be true that we can see some examples of shared sequences between genes, it is by no means true that we see wholesale evidence of gene duplication throughout the genome. According to one group of researchers,^[7] less than 4,000 genes share even 30% of their sequences with other genes.

Over 25,000 genes, as much as 62% of the human genes mapped by the Human Genome Project, were unique, i.e., not likely the result of copying.

Second, Caplan says, "The core recipe of humanity carries clumps of genes that show we are descended from bacteria. There is no other way to explain the jerry-rigged nature of the genes that control key aspects of our development."

Not everyone agrees. The complexity of the genome does not mean, necessarily, that it has been jerry-rigged by evolution. There is still so much we do not know. Caplan is speaking more out of ignorance and assumption than data. Listen to this comment from Gene Meyers, one of the principal geneticists from Celera Genomics, from a story in the *San Francisco Chronicle*:

'What really astounds me is the architecture of life,' he said. 'The system is extremely complex. It's like it was designed.'

My ears perked up. 'Designed? Doesn't that imply a designer, an intelligence, something more than the fortuitous bumping together of chemicals in the primordial slime?'

Myers thought before he replied. 'There's a huge intelligence there. I don't see that as being unscientific. Others may, but not me.' {8}

Jerry-rigged? Hardly! Confusing at the moment? Certainly! But more likely to reveal hidden levels of complexity, rather than messy jerry-rigging.

It will take more than bluster to convince me that our genome is solely the result of evolution. The earmarks of design are clear, that is, if you have eyes to see.

What are the Challenges of the Human Genome Project?

In closing, I would like to address what are many people's concerns about the potential for abuse of this information. While there is great potential for numerous positive uses of the human genome, many fear unintended consequences for human freedom and dignity.

Some are justifiably worried about the rush to patent human genes. The public consortium, through the National Institutes of Health, has made all its information freely available and intends to patent nothing. However, there are several patent requests pending on human genes from the time before the HGP was completed.

It is important to realize that these patents are not necessarily for the genes themselves. What the patent does protect is the holder's right to priority to any products derived from using the sequence in research. With the full sequence fully published, this difficult question becomes even more muddled. No one is anxious for the courts to try its hand at settling the issue. Somehow companies will need some level of protection to provide new therapies based on genetic information without hindering the public confidence and

health.

Another concern is the availability of information about individual genetic conditions. There are legitimate worries about employers using genetic information to discriminate over whom they will hire or when current employees will be laid off or forced into retirement. Upwards of 80-90% of Americans believe their genetic information should be private and obtained or accessed only with their permission. The same fears arise as to the legality of insurance companies using private genetic information to assess coverage and rates. A recent bill (June 29,2000) before Congress to address these very concerns was amended to the Health and Human Services appropriations bill, but was removed in committee. The bill will be reintroduced this session.[\[9\]](#) I would be very surprised if some level of privacy protection is not firmly in place by 2002.

Moreover, many are apprehensive about the general speed of discovery and the very real possibilities of genetic engineering creating a new class, the genetically enhanced. Certainly, there is cause for vigilance and a watchful eye. I have said many times that we can no longer afford to be ignorant of genetic technologies. And while I agree that the pace of progress could afford to slow down a little, let's be careful not to throw the baby out with the bathwater.

After a series of lectures on genetic engineering and human cloning at a Christian high school, one student wrote me to say:

I am a senior, in an AP Biology class, and I find genetics absolutely fascinating. It's both fascinating and scary at the same time. . . . [You have inspired me] to not be afraid of the world and science in particular, but to take on its challenge and trust God.

Amen to that!

Notes

1. "Genetics: The Future of Medicine," *NIH*, Publication No. 00-4873, 2.
2. *Nature*, 409 (15 February, 2001), www.nature.com.
3. *Science*, 291 (16 February, 2001), www.sciencemag.org.
4. Genetics: The Future of Medicine, 9-11.
5. Kevin Davies, "After the genome: DNA and human disease," *Cell*, 104 (Feb. 23, 2001), 465-467.
6. www.probe.org/did-the-human-genome-project-prove-that-darwin-was-right/.
7. Wen-Siung Li, Zhenglong Gu, Haidong Waing, and Anton Nekrutenko, "Evolutionary analyses of the human genome," *Nature*, 409 (15 Feb 2001):847-849.
8. Tom Abate, "Human Genome Map Has Scientists Talking About the Divine – Surprisingly low number of genes raises big questions," Monday, February 19, 2001, *San Francisco Chronicle*.
9. James M. Jeffords and Tom Daschle, "Political issues in the genomic era," *Science*, 291 (16 February, 2001), 1249-1251.

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"What are the Best Scientific Evidences for a Young Earth/Old Earth?"

I read with great interest your article on the Origins Web site "[Christian Views of Science and Earth History](#)." I am doing research on this age issue, focusing on the scientific data especially. The earth is either young or is old. You said

it well, "all truth is God's truth." I am looking for the best scientific evidences for a young earth/old earth and want to investigate what the other side would say to those opposing arguments. Can you help me out with this?

There are several books I can recommend.

From a biblical perspective, there is a recent volume titled *Three Views on Creation and Evolution* edited by J. P. Moreland and John Mark Reynolds in the Counterpoints series from Zondervan (1999). Hugh Ross has his *The Genesis Question* for an old earth perspective, and there is Henry Morris's *The Genesis Record* and John Whitcomb's *The Early Earth* from a young earth perspective.

From a scientific perspective, Hugh Ross wrote his definitive biblical and scientific treatise on the old earth called *Creation and Time* in 1994 from NavPress. Young earth creationists Van Bebbler and Taylor published a response titled *Creation and Time: A Report on the Progressive Creationist Book by Hugh Ross* also in 1994 from Eden Productions. ICR (The Institute for Creation Research) has published numerous technical monographs on a young earth which can be viewed and ordered at www.icr.org. Other young earth books, including Russ Humphrey's *Starlight and Time* can be found there, as well as at the Answers in Genesis website, www.AnswersinGenesis.org. Hugh Ross' organization Reasons to Believe also has online ordering at www.reasons.org.

This should give you more than enough to get started on.

Respectfully,

Ray Bohlin
Probe Ministries

"How Can I Prepare for College?"

Dear Mr. Bohlin,

I will be attending Cornell University in the fall of 2000. My declared major is pre-med, biochemical engineering. I will also attending the Mind Games conference in July. Can you suggest any Christian reading materials for me so that I can be prepared for the conference in July, but most importantly, so I can be prepared for Cornell in August as a Christian.

Good to hear we will see you in July! I am looking forward to meeting you and spending the week together.

I would recommend Jim Sire's book, *The Universe Next Door*, as a good place to start. Worldview is an essential concept to the conference and Sire maps out the different worldviews in a concise manner. Considering your future major, I would recommend *Darwin's Black Box* by Michael Behe and *Defeating Darwinism by Opening Minds* by Phillip Johnson for starters. If Sire proves interesting reading to you and you are wondering where some of these strange ideas came from, you might look for a copy of Francis Schaeffer's *How Should We Then Live?* which briefly (258 pages) traces the historical development of philosophy, theology, art and science in the west. Though the book is over twenty years old, Schaeffer turned out to be an accurate prophet of where things were headed. So, read Sire first and take on the others as time, money and interest dictate.

See you in July.

Respectfully,

Ray Bohlin, Ph.D.
Probe Ministries

The Coming Revolution in Science

The Design Inference



True scientific revolutions that impact more than a single discipline rarely occur more than once a century. Newton's *Principia*, published in the 17th century, truly qualifies. Darwin's *Origin of Species*, published in 1859, also belongs on the list. Standing in the wings, ready to join these esteemed works and perhaps even overturn the latter, stands William Dembski's *The Design Inference*.[\[1\]](#) This impressive work published by the distinguished Cambridge University Press outlines the mathematical principles necessary to distinguish intelligently caused events from natural events.

Just listen to some of the comments from the dust jacket of the book from secular philosophers and mathematicians. One wrote, "Dembski has written a sparkingly original book. Not since David Hume's *Dialogues Concerning Natural Religion* has someone taken such a close look at the design argument." Being put in the same sentence as David Hume is no small potatoes. Mathematician David Berlinski warns, "Those who agree with its point of view will read it with pleasure, and those who do not will ignore it at their peril."

Dembski has rigorously detailed the key trademark of intelligent causes, what he calls *specified complexity*. The term *specified* refers to the notion that an event conforms to an independently given pattern. Complexity refers to an event of small probability. For instance, people win improbable lotteries all the time. The odds are usually in the millions to one. But when the number of tickets purchased is considered, nobody questions the legitimacy of *someone* holding the winning ticket. This would be an event of small probability without any specification. Somebody will win, but nobody can predict whom. But let's propose that the same person wins the same lottery three times in a row! Suddenly there is an independent pattern and we immediately become suspicious that more than just chance is involved. We now have an event of extremely small probability that also conforms to a pattern or is specified. The most likely cause for such an event is that someone has intelligently tampered with the lottery.

Dembski boldly suggests that these same principles can be applied to the question of the origin of life and other evolutionary questions and still maintain the integrity of science. While Dembski has been sharply criticized by the evolutionary establishment, to their discredit, their critiques have been largely emotional and dismissive. No one has successfully challenged the heart of his thesis.

Now before you decide to run out and get a copy, please be advised that this book is not for the casual reader. Loaded with technical jargon and symbolic logic, you had better have eaten your mental Wheaties before tackling this one. But Dembski has written a scaled down version, which I will now discuss.

Hasn't Science and Philosophy Ruled Out

Design?

☒ William Dembski's groundbreaking book, *The Design Inference* from Cambridge University Press, is highly technical. Dembski has therefore written a follow-up book titled, *Intelligent Design: The Bridge between Science and Theology*,[{2}](#) which is more accessible to the general reader. *Christianity Today* has named it their 1999 Book of the Year in the "Christianity and Culture" category.

Listen to a few sound bites from comments of those recommending Dembski's *Intelligent Design*. A quantum chemistry professor from the University of Georgia says, "William Dembski is perhaps the very brightest of a new generation of scholars." A professor of philosophy from the University of Texas says, "William Dembski is the Isaac Newton of information theory." Another university professor proclaims "If Dembski is right, and I believe he is, then it is unscientific to deny the existence of God." Wow! Unscientific to deny God! Do you think that comment is rankling a good number of evolutionary biologists? Finally, another University of Texas professor of government goes further by claiming that "Dembski strengthens the case for saying that our deepest moral inclinations not only look designed, they are."

Let me now begin to satiate your curiosity by telling you a little more about this groundbreaking work. The book is divided into three parts. In the first part Dembski gives a historical backdrop to the current controversy over design. In academia, the design argument has been considered dead for over 150 years. Dembski identifies two major reasons for this demise of design. The first was the continual attack on miracles, which culminated in the 18th and 19th century. Dembski cogently explains that their arguments don't work.

The second blow to design came from Darwin's *Origin of Species*. Darwin dismissed the prevalent British natural theology of his day by not so much refuting it, but by

announcing that it simply wasn't scientific. Dembski quotes evolutionary philosopher David Hull, "He dismissed it not because it was an incorrect scientific explanation, but because it was not a proper scientific explanation at all." Darwin's faulty conception of science is still with us and Dembski sets out to refute it.

The criteria used by the British natural theologians were naive in the sense that they believed that design was self-evident. This led to far too many false positives, that is, assignments of design that were later proved to be naturalistic. The design argument was forced to retreat. In the second part of *Intelligent Design*, Dembski articulates the principles laid out in his *The Design Inference* for the general reader.

What Does a Theory of Design Look Like?

Having told you about Dembski's work and the impact it is beginning to have, I will summarize Dembski's prescription or cure for the rule of naturalism in science.[{3}](#)

No one in the design movement as far as I know seeks to invoke God at every turn as an explanation for natural phenomena. So why bring God into the picture at all? For most scientists, God is only a hypothesis, and an unnecessary one at that. But beyond the ordinary operation of nature is its order. Dembski references Einstein's remark that the most incomprehensible thing about the universe is that it is comprehensible. This order must come from outside the universe or from within. But science tells us today that the only allowable answer is that it comes from within. This naturalistic philosophy has become a form of idolatry. Nature becomes the do all and end all. As Dembski says, "Rather it is a matter of investing the world with a significance it does not deserve."[{4}](#)

Naturalism is pervasive in the culture. Even most Christians think and live naturalistically without realizing it. So how

can naturalism be defeated? What is needed, says Dembski, is a means of detecting God's actions in the natural world. In other words there must be a reliable way to distinguish natural causes from intelligent causes. Some sciences already employ such methods such as forensic medicine, cryptography, archeology, and even the SETI program, the search for extraterrestrial intelligence. SETI depends on the ability to distinguish an intelligent message from space from the surrounding radio noise. This can be done without necessarily understanding the message or knowing the message sender.

This brings up another crucial point of intelligent design. Dembski says that intelligent design is theologically minimalist.[\[5\]](#) By this he means that intelligent design empirically detects design without speculating about the nature of the intelligence. This is crucial to answer the critics who accuse design theorists of simply wanting to bring the Bible into science. If one detects design or concludes that a particular natural phenomena contains the necessary earmarks of design, that's all that needs to be said. One can personally reflect on the nature of this intelligence, but it is not a part of the scientific test.

Dembski calls for a new generation of scholars open to pursuing intelligent causes in the universe. Here at Probe we're committed to helping find, select, and train such potential scholars to take part in a true scientific revolution.

Does Intelligent Design Offer a Bridge between Science and Theology?

In this review and summarization of Dembski's insights let's now explore the future Dembski foresees for the dialogue between science and theology.[\[6\]](#)

Of course most within the scientific community see no future at all for such a discourse. Most within modern academia hold

to either of three models that Dembski labels as conflicting, complementing, or compartmentalizing. Most of us are very familiar with the conflict model. Most who call themselves rationalists or secular humanists would subscribe to this view. Basically they see science as having explained all of reality and that there is no room for theology at all. I once attended a conference where a theology professor was so intimidated by this view that he said that theology was a dead discipline and would cease to exist in twenty years.

Stephen J. Gould, a Harvard paleontologist, and the National Academy of Sciences have advocated the compartmentalization view. Basically they maintain that science and theology inform different parts of reality—science the realm of facts and theology the realm of morals and faith. There is no conflict and also no dialogue between the two. It is also not hard to see that this view basically rules theology out of any important discussions about real facts. Theology inhabits only the fuzzy world of morals, which must be relative if naturalism rules in science.

Similar is the complementarity view, which essentially states that science and theology can actually inform the same reality, but their language is so foreign to the other that no meaningful discourse can take place. Both are necessary to give a complete account of reality, but you can forget about the two ever talking to each other.

In one way or another, each of these three views will eventually rule theology as irrelevant to the important questions and a fully naturalistic science will eventually be the wellspring for all useful information and discourse. But as you might expect, Dembski offers a fourth view and argues that it is the only proper view of the two disciplines.

Dembski compares science and theology to two different windows that view the same reality. Since the windows are different, they gain a different perspective. But since they are viewing

the same reality, what is seen from each window can in many cases be meaningfully related. Both science and theology may on occasion, be capable of further explaining observations from each window. He offers the current discussion concerning the cosmology's Big Bang and theology's act of Creation as an example. If the Big Bang is true, then Christianity's theology of creation *ex nihilo* is a better explanation than naturalism's attempt to explain something from nothing.

There is much more work to be done here as Dembski readily admits, but the tone and direction is very refreshing.

What Are the Standard Objections to Design in Science?

There is the potential of the intelligent design movement bringing about a revolution in science. I have summarized the work of William Dembski, a double Ph.D. in philosophy and mathematics with a Master's of Divinity thrown in for good measure. In the appendix of his much acclaimed book, *Intelligent Design: The Bridge between Science and Theology*, Dembski investigates several of the more common objections to intelligent design. To conclude this review I will examine one of these objections.

Dembski states the first objection this way, "Design substitutes extraordinary explanations where ordinary explanations will do and thereby commits a god-of-the-gaps fallacy." Those believing that God used evolution as His means of creation usually voice this objection. This view is motivated by the tremendous history of naturalistic science in explaining very difficult natural phenomena by natural means. This often occurs after someone has claimed that God was necessary to explain a particular observation. Isaac Newton thought divine intervention was necessary to explain the irregularities of planetary orbits. It was eventually shown that these irregularities were periodic and not random and

thus explainable by natural law.[\[7\]](#)

Newton was widely criticized for this view, and many Christians fear that appealing to design now will end up in ridicule later when natural processes may also explain contrivances of intelligent design later. While this fear is understandable in the light of history, there are considerable differences. Design does not claim to simply explain what we do not understand. Rather, intelligent design is attempting to demonstrate a real solution to problems based on what we know about design, not what we don't know about natural explanations.

Besides, if we believe that the laws of nature are incapable of producing certain natural phenomena, such as the genetic code of DNA, just how long are we supposed to keep looking for a naturalistic solution instead of looking elsewhere? This puts shackles on scientific inquiry and stifles new ideas. Certainly we should attempt to exhaust all known naturalistic possibilities before pursuing a design answer. But fear of failure should not be our deterrent. There is always risk in proposing new scientific ideas and hypotheses. The risk is that you just might be wrong. But this has never permanently hindered the proposal of a new idea. Failure should be a constant risk in science. Otherwise nothing new will ever be discovered.

"Not all gaps are created equal. To assume that they are is to presuppose the very thing that is in question, namely, naturalism."[\[8\]](#) William Dembski has issued a strong challenge through his books and more are to follow from others dealing with the philosophy and science of intelligent design. The next several years should be very exciting indeed.

Notes

1. William A. Dembski, *The Design Inference: Eliminating Chance by through Small Probabilities* (Cambridge, England:

Cambridge University Press, 1998).

2. William A. Dembski, *Intelligent Design: The Bridge between Science and Theology* (Downers Grove, IL: InterVarsity Press, 1999).

3. Ibid., 97- 121.

4. Ibid., 101.

5. Ibid., 107.

6. Ibid., 187- 210.

7. Nancy Pearcey and Charles Thaxton, *The Soul of Science: Christian Faith and Natural Philosophy*, Wheaton, IL: Crossway Books, 1994), 91-92.

8. Dembski, *Intelligent Design*, 245.

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Darwinism Takes a Step Back in Kansas

Has Oz Returned to Kansas?

Suddenly, the mere mention of the Kansas State Board of Education in most educational and academic circles brings derisive giggles and sneers. In August the Kansas State Board of Education voted to remove references to macroevolution from state science testing standards. A wave of revulsion gripped

the nation's media. In *Time* magazine, Harvard University paleontologist Stephen J. Gould trumpeted, "The board transported its jurisdiction to a never-never land where a Dorothy of the new millennium might exclaim, 'they still call it Kansas, but I don't think we're in the real world anymore.'" [\[1\]](#) Gould further belittles honest concerns about the teaching of evolution by proclaiming: (1) no other nation has endured any similar movement (this makes us look bad overseas); (2) evolution is as well documented as any phenomenon in science (it is perverse to call evolution anything but a fact); and (3) no discovery of science can lead us to ethical conclusions (believe what religion you want, science doesn't threaten you).

That's a pretty scathing reaction. Let's see what else we can find.

Here's one from nationally syndicated columnist Ellen Goodman of the *Boston Globe*. [\[2\]](#) Ms. Goodman declared that "removing evolution from the science curriculum is a bit like removing verbs from the English curriculum. Evolution can still be taught, but it's no longer required, it won't be tested, and it will be discouraged." (However, natural selection, variation, and microevolution will still be recommended and tested.) Later she decries the fact that "In 1925, creationists dragged a young biology teacher, John Scopes, to the courtroom for the infamous 'Monkey Trial.'" Actually it was the ACLU that dragged Scopes into the courtroom. He couldn't even remember if he had actually taught evolution. They needed a "volunteer" to defend to test the new Tennessee law. (See Phillip Johnson's *Defeating Darwinism By Opening Minds*, 1997, IVP, Chapter 2 for the real story of the Scopes trial and its shameful portrayal in the play and film, *Inherit the Wind*.) Goodman also pontificates that "there is no serious scientific dispute about the fact of evolution." Notice that Ms. Goodman indicates that evolution is a fact, therefore beyond question. She also cleverly indicates that if you

dispute evolution, you must not be a serious scientist.

In the *Seattle Post-Intelligencer*, Sean Gonsalves laments, "Educated people everywhere are still in shock over the appalling ignorance displayed by the Kansas state board of education that voted two weeks ago to effectively remove evolution and the 'Big Bang' theory from the state's science curriculum. Is there still a science curriculum in Kansas?"[\[3\]](#)

Well, those unruly, ignorant anti-evolutionists really seem to have overstepped their bounds this time! You would think that we would be cowering in the corner somewhere after all the abuse from such heavy hitters, but no, actually, we're quite ecstatic. I have given you only a small example of the media and science firestorm, but it is just more of the same. While nobody enjoys being the butt of jokes and verbal abuse, what is significant are two things. First, the Kansas board has dealt Darwinists a severe blow by not mandating creation, thereby eliminating Darwinist's usual rallying cry of science versus religion. They have simply searched for a more objective means of presenting evolution. That's tough to argue against. Second, Darwinists have been flushed out into the open. Flimsy, *ad hominem* attacks, appeals to authority, and question begging have been brought out in the open for all to see. The Kansas State Board of Education has unintentionally raised the stakes in the decades old creation/evolution discussion.

What Really Happened in Kansas?

Given the reaction to the decision by the Kansas State Board of Education you would have thought the six board members who voted for the new standards in a close 6-4 vote were part of some dastardly plan to underhandedly bring God into the classroom. Also seemingly at stake was the reputation of the whole state of Kansas if its citizenry did not rise up in revolt against such an irrational decision. Apparently, Kansas had been set back decades in science literacy.

Well, what actually happened in Kansas? What did the board actually do and why? It is important to realize that the Kansas board authorized a 27-member panel of scientists and science educators from the state to revise the current state science testing standards. These standards do not mandate what can and cannot be taught, only what likely will be included on state science tests. What the board received was a highly prejudicial document making evolution the single unifying concept to the state's biology standards. When board chairwoman Linda Holloway asked the committee representatives for evidence of macroevolution they essentially replied, "We're the experts, and that will have to do." [\[4\]](#) What that means is that she received no evidence, just an admonition that, with their position as scientists, she should just trust them.

Rather than turn the Kansas high school classrooms into a propaganda machine for materialist philosophy, the board decided to amend the standards to maintain microevolution—natural selection acting on genetic variation—but not macroevolution³ the claim that microevolution leads to new complex adaptations and new genetic information. They also left it up to the individual school districts to determine how much or how little evolution to teach. Evolution was *not* removed from the curriculum, as so many news stories reported. Creation was not mandated, Darwin was not banned, and evolution was not censored.

What this *does* do is leave open to school districts the opportunity to teach the surging controversy surrounding evolution. Actually, what many in the intelligent design movement would have preferred, if possible, is to teach more evolution, not less. Meaning, let's teach not only the evidence for evolution, but also the mounting evidence calling the naturalistic creation story into question. Students should be familiar with evolution. It is the major story of origins within the scientific community. But in the interest of a true

liberal education, the serious questions regarding evolution should also be included. Students should be allowed the privilege of weighing the evidence for themselves, not just accepting it because their teacher tells them to.

This is really where the threat to the scientific community lies. The more doubt about evolution that's allowed, the trickier the educational landscape becomes for a fully naturalistic, materialistic approach to education.

In the past, the media barrage over such an anti-evolutionary decision has been decidedly one-sided. What is significant this time is that the Kansas board has received some rather hefty and significant support from invited articles, guest columnists, and op-ed pieces in prestigious news outlets such as the *Wall Street Journal*, the *Washington Post*, the *Chicago Tribune*, and the *Washington Times*. The debate is indeed changing.

Some Surprising Support for Kansas Board of Education

Amidst the unusual rancor and indignation from the media and scientific community following the decision of the Kansas State Board of Education, many have missed the small, yet significant, support the board has received for the spirit of their decision: namely, to try to find a way to disrupt the universal agenda to present scientific naturalism as the only possible explanation of where we all came from.

On August 16, 1999, the *Wall Street Journal* published an article by UC Berkeley law professor and Darwinian critic, Phillip Johnson.[\[5\]](#) Johnson quotes a Chinese paleontologist who openly criticizes Darwinism as wryly commenting that "In China we can criticize Darwin but not the government. In America you can criticize the government but not Darwin." After summarizing the frantic response of scientists and educators, Johnson commented, "Obviously, the cognitive elites

are worried about something a lot more important to themselves than the career prospects of Kansas high school graduates.”

Johnson pointed out that evolution is the main scientific prop for scientific naturalism, a philosophical system that leaves God totally out of its picture of reality. Quoting well-known scientists such as Carl Sagan, Richard Dawkins, Stephen J. Gould, and Richard Lewontin, Johnson makes clear that this is the real battle. Allowing evolution’s flaws to be detailed in classrooms would allow a broader discussion of fundamental assumptions. Johnson concluded optimistically, “Take evolution away from the worldview promoters and return it to real scientific investigators, and a chronic social conflict will become a chronic intellectual adventure.”

A few days later, the *Washington Times*[{6}](#) chided the rest of its media cohorts for a vast overreaction and actually cited evidence that calls Darwinism into question. The friendly editorial concluded with “No one, and certainly not the Kansas Board of Education, is saying that evolution should not be taught; it remains the prevailing scientific theory of creation. Rather, some healthy agnosticism and scientific open-mindedness on the matter would seem to be in the best interest of everyone curious about the greatest mystery of all.” Hear, hear!

The *Chicago Tribune*, while openly critical of the action of the Kansas Board of Education, also criticized previous actions of the National Association of Biology Teachers concerning evolution.[{7}](#) The association initially used the words *unsupervised* and *impersonal* to describe the evolutionary process. These clearly non-scientific terms were eventually and reluctantly removed by the association, who explained they didn’t think the terms would be construed negatively, which the *Tribune* called either a lie or clear demonstration of scientific fundamentalism.

Finally, the *Washington Post*[{8}](#) printed an article by Jay

Richards, senior fellow and program director of the Discovery Institute's Center for the Renewal of Science and Culture. The CRSC is currently the only think tank I know of that openly supports and endorses intelligent design. Richard's final point, "Fairness and objectivity in the science classroom require that teachers teach the controversy, not deny its existence," is fair, lucid, rational, and appealing. "Teach the controversy" has become a rallying cry. You are bound to hear it more and more. The debate in Kansas has resulted in similar debates around the country, to which we now turn our attention.

Darwinism Assailed in Other States

Following the recent decision by the Kansas State Board of Education the teaching of evolution was big news around the country. In Kansas there were roundtable discussions, lectures, and debates. Some were in academic settings, such as the University of Kansas and Washburn University, some were in churches, and some were sponsored by a humanist skeptic organization. The American Association for the Advancement of Science (AAAS) was prompted to publish their own statement deploring the action taken by the Kansas Board of Education.[\[9\]](#)

You might think that all the negative publicity would cause other states to back off any changes in their own science curriculum. But apparently, all this publicity has encouraged other school boards to chart their own course or adopt the methods of other states before them.

The Oklahoma State Textbook Committee voted to adopt a disclaimer to be placed on the inside cover of all biology textbooks. Unhappy with the propaganda-like treatment of evolution in the majority of textbooks they looked at, the committee needed the disclaimer to be able to recommend a sufficient diversity of biology texts for the state. While arguably not the best statement on the subject, the disclaimer

labels evolution as controversial, a separation of microevolution and macroevolution, and encourages students to study hard, keep an open mind, and perhaps they can contribute to the origins discussion in the future. Nothing is said about creationism, intelligent design, or any other theories. Basically the statement wants students to think critically about evolution.

What has been missed in the newly swirling controversy about the disclaimer in Oklahoma is that it is nearly a direct copy of the disclaimer adopted by Alabama over two years ago which has not been challenged in court. However, instead of mentioning the obvious connection, journalists attempted to draw parallels to a Louisiana school district directive that was recently struck down because it specifically mentioned creationism. The two disclaimers are not related, but in the attempt to make it look as bad as possible, the chosen tactic is to mislead.[{10}](#) Once again, a very reasonable, but not perfect resolution was dismissed as simply another attempt to smuggle creationism into the public schools.

Meanwhile in West Virginia a similar controversy hit the news. The Kanawha County Board of Education is considering a resolution that would allow for the teaching of theories for and against the theory of evolution. It soon came to light that Illinois and Kentucky had previously passed resolutions similar to the one in Kansas. Commentary and editorials were appearing in major and local newspapers across the country taking sides in a suddenly public and heated discussion. Clearly, something has changed. The usual evolutionist hand-wringing is sounding more like whining and the previously unheard-of support for a revision of the instruction in evolution is suddenly receiving a cautious but receptive ear in important academic, educational, and media circles. While it must be kept in mind that all of these “victories” are relatively small and can be easily overturned, nonetheless their simplicity, objectivity, and legal savvy are raising

eyebrows that paid little attention before.

What Does All This Mean?

The flurry of nationwide activity concerning the teaching of evolution in our public school systems, while noteworthy, is not terribly new. This battle has been going on for over three decades, but with seemingly little change. However, this time, as I have documented, there has been surprising support and very public discussion over the last few months. Phillip Johnson and others have been invited or allowed to offer their impressions and rebuttals in newspapers, journals, and magazines across the country. Public lectures, debates, and roundtable discussions have been offered before large crowds.

Something has definitely changed. I think we can isolate the change in two places. First some of the cherished, misleading evolutionary explanations are being rebutted openly and decisively in these public discussions. Second, the public is becoming better educated on the issues involved and they are less intimidated by the evolutionary rhetoric.

One of the favorite lines used to dismiss critics of evolution is to label them as religious zealots and fundamentalists. Religion and science, says this argument, have nothing to say to one another so you can't bring religion into the science classroom. Stephen Gould states the case in his usual journalistic style, "Science and religion should be equal, mutually respecting partners, each the master of its own domain, and with each domain vital to human life in a different way."[\[11\]](#) Elsewhere it becomes plain that Gould means that science deals in facts and religion in the intangibles of morality and such. This is seen more and more as condescending nonsense. Other evolutionists like Douglas Futuyma readily admit that, "By coupling undirected, purposeless variation to the blind, uncaring process of natural selection, Darwin made theological or spiritual explanations of life processes superfluous."[\[12\]](#) The negation

of a theological principle is itself, a theological principle. Besides, any theory which purports to explain where we came from will contain the seeds of ethics and morality.

Robert E. Hemenway, chancellor of the University of Kansas, tried to say that the Kansas decision is a rejection of science altogether.^{13} But when you actually read what the Board of Education did, they actually expanded the coverage of evolution from the previous standards and required students to know a very decent description of Darwinian evolution.^{14} Skepticism is healthy in science. The new standards actually promoted questioning and critical thinking. This kind of obfuscation was not so easily foisted on the public.

The educational effort of many organizations over the past several decades has begun to yield citizens surer of themselves and not so easily intimidated. Seeing articles appearing in major news outlets like the *Wall Street Journal*, the *Washington Times*, and the *Chicago Tribune*, as well as appearances on CNN, have galvanized popular opinion and provided means to critically counterattack the bluster of the opposition.

Although the coverage has not always been accurate and completely positive, and the actual decisions by education boards have not always hit the mark, the net effect has been a major opening up of the debate. Change has been accomplished in these few months that would have ordinarily taken years. As mentioned previously, the phrase “teach the controversy” will be found more and more in the public discussion. That’s exactly what needs to happen.

Notes

1. Stephen Jay Gould, “Dorothy, It’s Really Oz, 1999,” *Time* vol. 154, no.8 (August 23, 1999), 59.
2. Ellen Goodman, “Those Ever-Evolving Creationists,” *Boston*

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