In Sightings on September 8, 2005, Walter Mees argues that scientists should be scientific about questions raised by "intelligent design" (ID) theorists and seriously consider evidence that is claimed to support "intelligent design" theory. While I am sympathetic with his concern that partisans on both sides of this issue be less dogmatic and more willing to listen carefully to the arguments for and against ID, I do believe that Mees's argument confuses the proper roles of science on the one hand and theology or philosophy on the other.

If evolution is the method of creation, of course it is natural for people of faith to be looking for purpose, design, and direction in the process of evolution. Science, however, develops hypotheses and theories to explain and predict observable phenomena that are confirmed or supported by empirical data. Purpose, design, and direction are concepts that lie beyond the purview of proper science.

Mees quotes George Gaylord Simpson and Edward O. Wilson, who deny a role for God and purpose in creation. In those statements they also move beyond the pale of what is appropriately scientific into what is sometimes called "scientism." It is one thing to say, "As I employ scientific method, I see no way to test for purpose in the process of evolution." It is quite another to say, "There is no purpose in the evolution of the universe."

ID raises similar problems. It is one thing to describe certain phenomena as "irreducibly complex." It is quite another to say that therefore there is an intelligent designer. The first claim may be subject to scientific debate; the second takes us into the realm of theology or philosophy.

ID also poses theological risks. Too often in the past, people of faith have claimed that certain lack of scientific knowledge indicated the truth of claims about the existence of God. Newton could not explain all planetary motion and supposed that God was the explanation. When LaPlace discovered a way to account for all planetary motion without God, he could then say of belief in God, "I have no need of that hypothesis." ID proponents run the risk of affirming the existence of God on the basis of evidence that may find a different explanation.

Teilhard de Chardin, both a priest and a biologist, affirms a directionality in the evolutionary process, moving towards what he calls the "Omega Point." My experience has been that scientists appreciate his scientific knowledge and accomplishments but feel quite nervous about his talk about purpose and direction in the evolutionary process. I share some sympathy with Teilhard's point of view, but I recognize that in talking about movement toward the "Omega Point" he has moved from science to faith or philosophy.

I quite agree that the theory of evolution does not always rest easy with Christian faith. I also affirm that I am ready to accept scientific arguments that demonstrate how widely confirmed the theory of evolution has been. I also affirm that as a person of faith I see the hand of God in creation, and I believe that it is appropriate
theologically to talk about purpose in creation, even as I acknowledge that these affirmations do not sit easily with the scientific theory of evolution.

I think that this debate may be helped by how we cast the relationship between science and theology. In "faith and science" discussions four ways of characterizing the relation of science and religion have been commonly delineated, following the lead of Ian Barbour in *Religion in an Age of Science*. These four ways include seeing religion and science in conflict, as independent of each other, in dialogue, or as integrated with each other. A more complete discussion of this topic would give fuller explanations of the four positions along with examples of each. Following the lead of George Koch, however, in the Winter 2003 issue of *Covalence*, I'd like to suggest a fifth position, "religion and science in paradox." Koch suggests that one of Niebuhr's five ways of relating Christ and culture, "Christ and culture in paradox," may be helpful for understanding how religion and science relate. In other words, there may be many ways that people of faith can affirm the theory of evolution, while at the same time acknowledging that there are tensions and points at which people of faith must take a stance that may be at odds with evolutionary theory.

Proponents of ID seem to feel that they must adopt a purportedly scientific position that is entirely compatible with biblical belief in creation. The position they develop, however, is of questionable scientific legitimacy. Much more reasonable is to recognize that science has its proper sphere, much of which people of faith can affirm, but that there may be places where people of faith, for theological reasons, must take a stance that is at variance with a purely evolutionary point of view.

Roger E. Timm is pastor of Ascension Lutheran Church, Riverside, Illinois.

Re: Perspectives on the Faith-Science Relationship and Views of Intelligent Design

Author: Walter Mees, Jr. (---.isanca.dsl-w.verizon.net)
Date: 10-24-05 11:21

Roger,

It's good to hear from you. I assume you are the same Roger Timm who served for a time at the UCLA Chapel in Westwood.

Thank you for your interesting contribution to this forum - particularly the outlining of five ways of seeing the interchange between science and religion. Attempting to adopt your outline, my "take" on the past years of this conversation is that while the ID effort as spearheaded by Phil Johnson, Michael Behe and others can be characterized as an attempt at dialogue, the science "establishment" has insisted on the first model: religion and science in conflict. But that isn't precisely accurate either. It's not that Johnson and Behe are religious that's the problem, it's that they have asked embarrassing questions and pointed out weaknesses in the underlying...
philosophy that is neo-Darwinism, and that they won't go away.

Chalk it up to poor communication skills, but I must correct the notion expressed by more than one member of this phorum that I have missed or confused the difference between science and philosophy. I fully realize that this debate is over, not the scientific method as method, but philosophy of science. It is my further view that there is no conflict between the scientific method and religion; in fact, most of the great names in science - Kepler, Copernicus, Galileo, et al, were not only religious but Christian. They used the scientific method to seek answers to their questions - whatever the answers might be!

Now obviously, these religious scientists sometimes ran afoul of members of the religious establishment who objected to their findings on *religious* (that is, philosophical) grounds. Sometimes they were treated quite badly by the Church -- all to its discredit. It was as if the Church said to scientists, "Study away! Follow the evidence wherever it leads - unless it leads where we don't want you to go. If that happens, bury your results. Repudiate them. Twist them until they point where we want them to point. Or else!" If this attitude looks familiar, it should. People in power take this approach all too often in all sorts of contexts.

Fast forward to our own day. Into a closed community in which the only answers to which the method is allowed to lead are material answers came scientists, philosophers of science, and (incongruously) a law professor, who pointed out that a Big Bang implies a banger, "designoids" imply a designer, "irreducible complexity" implies a planner, and the presence of life on earth against inconceivably high odds implies a fine tuner. While other scientists have picked up the conversation, admitting that, though outside the "bounds" of science as materialism, they are thoughts worth considering, those who guard what "the public" will be taught about science find themselves reprising the role of the Church versus Galileo and of Tennessee versus John Scopes.

The roles are reversed. The tables are turned. If it was wrong for the Church to squelch scientific/philosophical inquiry in the 1500's, it is wrong for neo-Darwinists to squelch it today. And if it was wrong for churchpeople to condone such tyranny in the 1500's (or merely turn a blind eye to it), it is equally wrong for us to pretend it is not happening today.

My purpose in writing to Sightings was to simply point out this fact, and to say that it's too late in this discussion to pretend it's not happening, but it's also too early to declare defeat and fall back on "nonoverlapping magisteria" or "paradox" or any such thing. This debate is about philosophy of science, and will be won or lost legitimately, in my view, by just those people.

I expect the ID folks to ultimately carry the day, for the same reason that Copernicus/Galileo did. I'm also rooting for their side for the emotional reason that I don't like to see people exploiting power rather addressing the issue. If it was wrong for the Church then, it is wrong for Science now. But I repeat myself.
I believe the debate about evolution prompted by creationists and Intelligent Design (ID) theorists betrays a fundamental confusion, but not only on the part of creationist and ID advocates. The problem arises from the fact that the concept of evolution is highly ambiguous; it is used not only by scientists within the context of their disciplines, but by certain scientists and philosophers who use it as an ideological concept as well. In this context the word loses its scientific character in order to express a philosophical belief, but this distinction is largely ignored and confusion reigns.

The article by Walter H. Mees, Jr. buys into this confusion. He cites comments from Edward O. Wilson and others who are clearly expressing an atheistic point of view, and then mistakenly equates their beliefs with the scientific theory of evolution. The theory has served both atheists and theists in expressing a theological/philosophical position.

Another aspect to this situation is the fact that the theory of biological evolution covers such a vast and complicated territory. In describing the process one might use the language of chance and random happenings, or, just as legitimately, the language of direction and continuing growth toward greater complexity. The point is that to use the former as a jumping board to atheism, or the latter as a jumping board to theism (or pantheism), is to desert the governing assumptions of scientific investigation.

ID advocates are engaging in a form of natural theology rather than scientific theory. As a believer I may well resonate with their conclusions, but I must also recognize that the integrity of science (as well as theology) demands that a clear line be maintained between it and appeals to an Intelligent Designer, or God. The clergyman William Paley (1743-1805) is well known for his argument that the world demands the idea of a Designer; ID advocates may not be clergy, but they are making the same kind of argument as Paley.
The English theologian William Paley wrote an influential book in 1802 entitled *Natural Theology: Evidences of the Existence and Attributes of the Deity, Collected from the Appearances of Nature*. Paley employed the metaphor of a watch discovered on a beach. One would not know who made the watch, but one could infer that there was certainly a watchmaker. In such a way, humans studying nature could also come to understand God as its creator and designer. This metaphor of nature as watch is perhaps one of the most famous metaphors in the philosophy of science and haunts us to this day, as we see in the current debates about “equal time” for Intelligent Design Theory in the science curriculum of public schools.

Today, some read the evidence of nature and find no evidence for the existence of a Deity. Richard Dawkins, the contemporary biologist, notorious atheist, penned a book with the title *The Blind Watchmaker*. He argues that “The universe we observe has precisely the properties we should expect if there is, at bottom, no design, no purpose, no evil and no good, nothing but blind, pitiless indifference.” In the context of the warfare between evolution and creationism in the United States, the problem is perhaps less with believers who read the Bible as a literal account of Creation and more with believers who read Richard Dawkins as a literal account of evolution.

Intelligent Design advocates argue that random genetic drift and natural selection alone cannot account for the “irreducible complexity” in certain natural phenomena. The classic example of this is the human eye, to which Charles Darwin himself called attention. How could such a complex mechanism with so many independent parts have arisen by gradual incremental changes, when the mechanism would not function without all of the parts working together? Intelligent Design advocates argue that some outside agency would be needed to “specify complexity”, though they do not define who or what the “designing” agency is. This can be seen as a new version of the God-of-the-Gaps argument and suffers from all of the earlier attempts to insert God as an explanatory fix in science’s progressive history of accounting for the unknown. Besides, God is either everywhere present in all processes of creation or God might as well be nowhere.

So if God is everywhere, then why is God so hard to perceive? One could imagine a God who would be more like a Chairman Mao or a Comrade Stalin. This God would have designed a universe with photographs of himself hung everywhere in nature. We would be compelled to believe in the existence of this God, because everywhere we turned with our microscopes, telescopes, and other devices, there would be both the evidence for his existence and of course also the secret police to enforce our acknowledgment. Everything in the universe would occur by divine order, micromanaged in five-year plans and designed in a command economy. We might wonder whether such a dictator God would be worthy of our admiration and love, but there would be no doubt, no uncertainty. Of course, science is yet to find an unequivocal “made by God” label attached to nature.

If the only other choice we have is the literal reading of Richard Dawkins, however, then maybe we should
stop teaching evolution altogether. Mere survival and reproduction do not provide adequate purposes for human aspirations. Too much of this kind of “truth” may not be wholesome for our children or society. The core of the evolution wars is whether a scientific understanding of biology allows room for religious and philosophical commitments to purpose in human life, purposes that somehow also must connect to the unfolding history of the universe. While scientists often wax poetic about nature, evoking wonder, awe, and indeed reverence, they mostly lack philosophical and theological language to contextualize such feelings and motivations as continuous with perennial spiritual quests. The public voices of “science” are more often than not promoting atheism, confusing the boundaries between science and scientism.

The history of the anti-evolution debates in the United States is less about biology and more about morality. Going back to the 1925 Scopes Trial, the progressive politician, William Jennings Bryan, got involved largely because of his objections to Social Darwinism and Eugenics, which at the time were widely used to justify any number of social injustices. Thirty states had eugenics laws. Indeed, the “science” most used to justify Nazism was first published in the peer-reviewed journals of the United States.

Today, the anti-evolution arguments are quite similar -- evolution equals materialism equals atheism equals nihilism equals immorality. The last Supreme Court case to examine this question, the 1987 case Edwards v. Aguillard ruled against Creation Science not on the basis of the science, but that it was a sectarian religion and thus could not be taught in the public schools. The anti-evolution forces regrouped, reorganized, and united around a “science-only” tactic – calling evolution “just a theory” and requesting equal time for Intelligent Design Theory. The old Creation Science arguments have been resurrected, but without mention of the Bible or officially naming the reputed designer.

School boards, educators, scientists, clergy and concerned citizens could quickly resolve the debate by first focusing on what happened when instead of getting dragged into the how and why debate. It is vital that we separate known natural history from the interpretation of that natural history. We can debate the meaning of the Cambrian Explosion, but we should not be denying that it happened. Scientific evidence for a long and evolving natural history of life on this planet has grown dramatically and profoundly in last two centuries.

The term “evolution” appropriately applies also to this known natural history of the planet. Since Darwin’s time, we know a lot more about this natural history, such that even responsible Intelligent Design advocates admit to a long Earth history. These ID advocates rarely talk about natural history, however, because they do not want to alienate the Young Earth Creationist who constitutes the base of their movement. We should not conflate the what and when questions with the how and why questions.

There is nothing necessarily scientifically wrong with believing that God, by whatever name and by whatever means, is actively involved in the entire four billion year life drama and the even longer and much larger cosmic adventure. Based on current science, we would have to say that God reuses DNA, hemoglobin, cell parts, developmental processes, skeletal structures, organ processes, and much more. God creates by recycling. And the building blocks are shared between humans and even very remote species, as in the human eye, which adapts plant technology to do its light detection work. Scientifically, there would be no necessary problem believing in such a Creator, as long as we acknowledge that the process took a very long time relative to our human life span. Species have come and gone and here we are. How does God accomplish this? Well, we would not know, but it certainly seems likely that God also made important use of some random processes and natural selection; the latter we shall re-contextualize at the Great Eucharistic Law – eat and be eaten. And yes, there is a profoundly sacrificial dimension to life, so our gratitude is justified, especially for the food we are
about to receive.

To focus on natural history, what happened when, is to separate the more responsible Intelligent Designers from the Young Earth Creationist extremists. As long as we are not denying natural history, then we can entertain and excite our students with lots of debates within biology about how and why. Young people get very excited by examining the meaning and purpose of their lives, a personal discussion that needs to be contextualized within an entire universe, which of course, is exactly what Richard Dawkins is also trying to do. Atheism also has a place at the round table of plausible worldviews, but it cannot simply claim to be “scientific”.

There are many purely scientific debates about whether random genetic drift and natural selection are really adequate to account for the florescence of life forms found in nature. Developmental systems theory, mathematical patterns, convergent evolution, symbiosis, multi-level selection theory, genetic bureaucracies, niche creation, and most importantly for humans, Lamarckian patterns of cultural evolution, are just some of the hot debates in contemporary biology and anthropology that relativize Intelligent Design Theory as a narrowly partisan movement within science (and religion). It would be great if our children got excited about these debates within the sciences and mysteries of life.

The problem, however, is not with the term “intelligent”. The “intelligence” of nature is not in the eye of the scientific beholder, it is in the phenomena themselves. This “intelligibility” is the precondition for science. The metaphor of “design”, however, is much more problematic. Why should we limit God’s generativity to a term taken from human architecture and engineering? There are much more interesting metaphors for God – artist, lover, friend, parent, teacher, motivator – all of which are also ultimately inadequate in describing that which transcends all and is also everywhere present.

Part of the problem is that we do not teach our children about religion and philosophy in the public schools. There are no Constitutional barriers to such curricula, as long as we are not sectarian. The solution to the evolution wars proposed above is itself recycled medieval Muslim, Jewish, and Christian theology, but that is another story waiting to be taught and debated anew.

William Grassie is founder and executive director of the Metanexus Institute <www.metanexus.net>. Metanexus has 300 projects in 37 countries promoting the constructive engagement of religion and science. This essay originally appeared on the Metanexus website, one of over 8000 essays, including an extensive debate between Intelligent Design advocates and their critics.
defining science, philosophy/theology, religion

Author: Harold E. Hill (---.dsl.chcgil.ameritech.net)
Date: 09-14-05 11:39

(1) Science is not concerned with truth nor is it a form of truth; "truth" is left to the speculations of philosophers;

(2) Religion is a cultural phenomenon. Its study belongs in the laboratory of the social scientist. It is not theology (a subset of philosophy)

A religion, furthermore, can exist without including in it a theistic theology or, indeed, if its activities are designed to manipulate extraordinary powers in nature, any theology at all. Note that shamans and priests are engineers without any need to be theologians or scientist in order to ply their trades.

(3) Applied science is engaged in by "engineers". There activities are neither philosophical nor scientific. Engineering is to be found in religious contexts whenever power is manipulated (such as in sacramental rituals and exorcism).

Fundamental to science is the collection of sense-perceptible phenomena. Scientists then postulate theories to relate facts to one another. They rely on logic and the application of "rules-of-thumb" such as plausibility, verifiability, and parsimony ("Occam's razor").

New phenomena lead to the modification or supplanting of theories. It is to be noted, therefore, that theories are tentative and never absolute. Science is always always a work in progress and never absolute. No theory is an absolute "law".

It means also that there is no such thing as absolute "scientific proof". The term is used only of a successful demonstration of the logical integrity of an argument (which is what Euclidean plain geometry is all about).

"Truth" is a term used by philosophers--not by scientists. Philosophy concerns itself with assumptions and speculations about the identification of "Truth" or "Reality". It's field also includes speculations about the reliability of logic, morality/ethics, etc. Its proof of anything employs the same definition (logical integrity) as science.

Of course, philosophers may speculate about scientific assumptions; individual philosophers may don the hat of the scientist (but safely only when he/she recognizes the nature of that field). So also individual scientists may (but not while wearing the hat of science) engage in philosophical speculation.

"intelligent design" is a synonym for the "argument from design" used for centuries and in a variety of cultures in
speculation by philosophers. It has nothing to do with religion or science.

"creationism" is a term for the position of those who hold the cosmological descriptions in the Bible to be factual. This means that they claim that those descriptions are scientifically acceptable.

The Creationists' cosmological "facts" are rejected by modern science as failing the tests (outlined above) of factuality.

The two Biblical accounts in Genesis (scholars date them far apart and note that two different god names are used therein) are set in the context of a (theological) theistic theory which is not to be confused with the scientific theories in the accounts. The rejection of the factuality of the accounts, therefore, does not included either the acceptance or rejection of theism.

Since science is not philosophy/theology, it makes no pronouncements about the concept of a god. The concept belongs to the philosophers/theologians. Unfortunately there are scientists and professional religionists who do not understand this.

**Re: defining science, philosophy/theology, religion**

Author: V. V. Raman (---.fairmp1.roc.ny.frontiernet.net)
Date: 09-25-05 16:23

**Truths in Science and Humanities**

1. Truths are interpretations of perceived reality.

2. Scientific truths are those interpretations which conform to a rational, consistent, and coherent framework in the context of all elements of perceived reality. Scientific truths are exopotent: They endow us with the capacity to manipulate the world around us.

3. The truths arising from the humanities (art, literature, poetry, religion) are interpretations of experienced reality, and are enormously relevant to the experiential dimension of existence, as distinct from the intellectual (logically grasped) dimension with which science is concerned. These truths are endopotent: They transform our inner being in rich and meaningful ways. We need both exopotent and endopotent truths.

V. V. Raman
September 25, 2005
Sightings continues the conversation on evolution and ID. At one level there certainly is heated argumentation and passionate responses. I found it interesting after my initial reflection was posted that all of the responses that I got end up one way or the other defending either evolution or ID. All responses missed what I was trying to communicate in the article. It was rather humbling to me for it challenges me as a writer to be more articulate and further clarify.

As Christians, we need not be fearful of whatever is uncovered from scientific discovery. I cling to and uphold all that the First Vatican Council (1869-1870) declared; principally, that there is no tension between faith and reason. Perhaps that could be restated to say that science is not a competitor to faith and faith is not opposed to science and knowledge. We are to never be threatened by what reason uncovers. No matter what scientists find in the material world, it can never change the core of revelation given to us in the Gospels and in God's self-revelation in the person of Jesus Christ.

Much of what is lurking behind this alleged debate between ID and evolution is the mentality that faith and reason are competitors. Vatican I clearly stated the opposite, that faith and greater knowledge of the natural world are not hostile to one another. In fact, they can support each other and provide valuable information to the benefit of the other discipline. Until researchers, academics, and theologians open themselves to the idea and possibility of mutual enrichment and interplay between disciplines, there will continue to be hostility and division.

To conclude it might be helpful to remember that we are human beings. As Christians, we believe this comprises body and soul. Darwinism and no other scientific theory or discovery attempts to describe how the soul came about or from where it comes. Nor should it. That's the job of theology. One should not try to do the job of the other, or accuse the other of failing to do what properly belongs to one's own discipline. As the two, science and theology, learn from one another, as we uphold the gifts from each discipline, and if we can see one another as mutual partners, then together we will journey deeper into the mystery of life, and into the Being who is Life itself.

Re: Continuing the Conversation...

Author: V. V. Raman (---.fairnrl1.roc.ny.frontiernet.net)
Date: 09-24-05 17:11

Challenge for our World
Among the many problems currently confronting humanity are the divisions between and within groups: political, sectarian, religious, ideological, and more. There have always been differences in views and worldviews. But it would seem that in recent years these have been accentuated and blown to a degree that is
not only unhealthy psychologically and emotionally, but is also wrought with serious dangers for the sane survival of societies and nations.
Consider, for example, the growing divide between science and religion. Half a century ago, thoughtful scientists and theologians launched efforts to bring these two often conflicting institutions together. In principle, though not always in practice, science enriches the mind and religion enriches the spirit. Attempts to build bridges have been going on with at least marginal success. But in the meanwhile virulent forces have arisen which castigate science for all our environmental and technological disasters as well as moral and spiritual chaos. On the other hand, in the writings of many prestigious writers and in the minds of many who have chosen science as their sole guide and source for life, religions are no more than a mockery of humanity's capacity to think and reason, and are remnants of dark-age beliefs that often instigate people to hate and kill, and engage in intolerant behavior.
At a time like this, it is important for everyone who is intellectually, morally, or spiritually affiliated to whatever belief-system or ideology to pause a little and recognize that what he or she may consider to be an embodiment of evil or stupidity may not really be so. Both scientists and religionists should realize, as most intelligent people do, that science and religion are among the lofty expressions of the human spirit which have served humanity in countless ways.
In every religious tradition there have been saintly men and women who have taught and practices love and compassion, and served fellow humans. Besides remembering that religions have inspired grand music, glorious art, and stupendous architecture, we recall the likes of Saint Francis of Assisi, Saint Ramalinga, Mahatma Gandhi, Albert Schweitzer, Umar Ibn al-Farid, David Lachkar and more. To equate religions with the Inquisition and fanaticism would be as simple-minded as equating science with nuclear bombs and deforestation. Religions, like science, have the potential for bringing out whatever is best in each of us. They also have deep cultural and historical roots.
In the face of the mounting problems that threateningly stare in our face, we of the twenty-first century don't have the luxury of deepening the divides that are becoming the hallmark of our nation and of the world. It may be in our best interest to listen to the heart of our opponents with as much sympathy as we can muster. A good deal of humanity's welfare depends on how sincerely and effectively men and women of goodwill from all groups come together in a spirit of understanding, tolerance, and mutual respect to make this a better world for all of us.

V. V. Raman
Emeritus Professor
Rochester Institute of Technology
September 1, 2005
Thoughts from a 'fringe' scientist

Author: Farr Curlin (---.dsl.chcgi.ameritech.net)
Date: 09-20-05 22:20

I am not a theologian, so I will not comment on the theological implications of neo-Darwinian theory or the intra-ecclesial implications of Cardinal Schönborn’s essay. I am, though, a scientist by training. I have a degree in biology, a degree in medicine, and I am employed as a “clinician-investigator” at a reputable university. I’ve studied physics, organic chemistry, biochemistry, molecular and cell biology, physiology, genetics, biomechanics, embryology, anatomy, statistics, and even invertebrate paleontology. So I am a bit amused to learn that I am not a “mainstream scientist” because I am not persuaded that the available evidence justifies the conclusion that raw materials, random mutation, natural selection, and 1.5 billion years are sufficient inputs to generate the biological order which I inhabit and study.

It is not that I don’t believe in evolution. I do, to a point. I am persuaded that natural selection, over time, promotes the reproduction of those organisms that are most fit. In combination with the materials on which it acts – namely a certain amount of existing variation in phenotypically expressed genotypes, plus the combined effects of genetic mutation and recombination (sexual and asexual) – natural selection has been observed to yield real evolutionary change over time. Yet the evidence available to us suggests that the changes that natural selection and randomly occurring genetic variation can produce are constrained in fundamental and seemingly insurmountable ways. According to simple laws of probability, and as affirmed by decades of empirical observation, random mutations and the interchange of existing genetic information are not capable of generating the new genetic information that is needed for the millions of steps that would be required to go from a single-cell organism to the biological order we observe (leaving aside the empirical and theoretical impossibility of the spontaneous emergence of a single-cell organism in the first place). Apologists for evolutionary theory have asserted that the difference between the limited types of change which are not only predictable but also observed (often called ‘microevolution’) and the change of the sort which requires substantial new specified information (often called ‘macroevolution’), is a matter of mere details. These are details akin to the difference between humans evolving to be able to dunk a basketball on a 15 foot rim vs. evolving to be able to dunk a basketball on a 10,000 foot rim. Biologically, the difference is more than one of degree.

Among so-called “mainstream” and “fringe” scientists alike, it is agreed that neo-Darwinian theory requires natural selection and non-directed processes of genetic variation to do what is intuitively to many, and experimentally to all, impossible – to climb what Richard Dawkins’ himself optimistically calls “Mount Improbable.” Perhaps blind necessity, working itself out in the form of spontaneous genetic variation and natural selection has, over the course of the past 1.5 billion years, generated the innumerable feats of biological engineering that are displayed in the natural world, many of which exceed the capacity of the human mind to fully explain, much less design, and which include the human mind’s capacity to, through the bewilderingly complex interactions of hundreds of billions of nerve synapses in the human brain, turn and consider from whence it came. Perhaps. Yet, in view of Mount Improbable, we might fairly ask the apologist of neo-Darwinian theory to explain how the empirical data lead to his conclusions. How does 1.5 billion (or 100 billion) years allow the empirically impossible to become plausible?
If one reads the *New York Times*, *Science*, or leading university-level biology textbooks, one gets the sense that evolutionary biologists have provided “overwhelming evidence,” evidence which goes “beyond reasonable doubt” in proving that the combination of raw materials, time, non-directed processes of genetic variation, and natural selection have generated the biological order we observe. Have they? Why then do we need to keep invoking the existence of overwhelming evidence rather than simply overwhelming by presenting the evidence? As a student of the subject for almost two decades, I find the treatment of evolutionary theory in the popular and scientific literature decidedly unpersuasive.

Daniel Dennett, a philosopher and one of the leading apologists for neo-Darwinian theory, demonstrates a typical pattern of reasoning in a recent essay published in the *New York Times*. There Dennett concedes that the apparent design found, for example, in the human eye, naturally prompts a question, “[How] could that engineering marvel be produced by a series of small, unplanned steps?” Dennett then answers the question by arguing that as we learn about the genes involved, “we can begin to tell the story of how photosensitive spots gradually turned into light-sensitive craters that could detect the rough direction from which light came, and then gradually acquired their lenses, improving their information-gathering capacities all the while. We can't yet say what all the details of this process were, but real eyes representative of all the intermediate stages can be found, dotted around the animal kingdom, and we have detailed computer models to demonstrate that the creative process works just as the theory says [emphasis mine].”

Critics of neo-Darwinian theory, among them those who identify themselves as supporters of the notion of intelligent design, question whether such stories, which are told at ever higher rhetorical decibels, are plausible in light of the data. They argue that Dennett’s story sounds plausible only because it is not submitted to the usual conventions of scientific narratives, which require consideration of the “details” — namely how, given what we know, it is possible for photosensitive spots to develop at all, and how, after emerging, they could turn into light-sensitive craters, and so on. Rather than engaging their critics in professional dialogue about these questions, many apologists for evolutionary theory have engaged in a rhetorical campaign that falls decidedly outside the scientific community’s traditions of discursive reasoning.

Rather than explicating the data so as to persuade the not yet persuaded, most apologists for evolutionary theory continue to make assertions that are derivative of the following:

**The evidence for evolution is so overwhelming and persuasive that no reasonable person of fair mind, sound intellect, and a basic education in the subject matter would doubt the basic tenets of neo-Darwinian theory.**

Along with this claim, we find the tautological and meaningless assertions that those who disbelieve evolutionary theory are therefore not “mainstream scientists,” and that no “mainstream scientists” disbelieve evolutionary theory. We need merely open our eyes and ears to confirm that many trained scientists who have studied the data are not convinced of the neo-Darwinian conclusions. Otherwise, Dennett would not need to write his essay. That critics of evolutionary theory include many of sound intellect is evidenced by their capacity to complete PhD programs at prestigious universities, write intelligible books and papers about complex topics, and engage their interlocutors in an ongoing debate that the other side claims does not exist. If the problem is not unfamiliarity with the data, or insufficient intellect, then perhaps skeptics of evolutionary theory are not fair-minded. Indeed, the story goes, most of them cannot consider the data objectively because they are theists with hidden, if unconscious, agendas. Dennett makes the point this way:
The fundamental scientific idea of evolution by natural selection is not just mind-boggling; natural selection, by executing God's traditional task of designing and creating all creatures great and small, also seems to deny one of the best reasons we have for believing in God. So there is plenty of motivation for resisting the assurances of the biologists. Nobody is immune to wishful thinking. It takes scientific discipline to protect ourselves from our own credulity, but we've also found ingenious ways to fool ourselves and others.

Indeed. Dennett is rightly suspicious that religious believers will have a hard time objectively analyzing the data regarding origins. After all, many of us stand up on Sundays to profess that “We believe in one God, the Father, the Almighty, maker of heaven and earth, of all that is, seen and unseen.” I, for one, hold out the possibility that my reason is so crippled by my Christian formation that I cannot appreciate the overwhelming character of the evidence plainly seen by those who are not so ideologically encumbered, though I do wonder whether the non-theist will have an easier time finding the objective posture, especially given the radical implications if no naturalistic explanation can account for the biological order. Either way, my only way out of skepticism is to either be persuaded by argument in light of the empirical data, or, if not persuaded by data and argument, to trust that because virtually all scientists who are not theists endorse neo-Darwinian theory, I should also. The rhetoric of the neo-Darwinian supporters has removed any remaining possibility of the latter route.

In numerous past conversations, fellow students, physicians, and professors have come to know that I do not find neo-Darwinian explanations to be plausible accounts of macroevolution. After their initial looks of polite embarrassment, I always ask my interlocutors, “What is the data that persuades you?” I have been as underwhelmed by their answers as by those found in the scientific and popular literature. An otherwise brilliant cell biology professor told me, “I just think, at the end of the day, that with enough time even those things that appear impossible can happen.” A graduate student in physics asserted, “There really is no debate about this among scientists.” Physician-scientist colleagues and friends assured me there is “mountains of evidence,” but when pressed could only come up with examples of microevolution.

Most, when queried further, have told me that although they are scientists, they cannot be expected to know about the particular field of evolutionary biology. After all, science is a vast domain, and the members of one branch of the scientific community usually trust the findings of those in another. So I turned to the experts and examined their data and arguments myself. I began with college biology textbooks and moved on to the writings of evolution theorists such as Dawkins, Gould, Ruse, Sarkar and Dennett. In recent years, I have begun to read websites such as www.talkorigins.org, a site which has been explicitly developed to provide “mainstream scientific responses” to the “assertions of those advocating intelligent design or other creationist pseudosciences.” What I have found is long on rhetoric and short on data and argument. In the end, I am left with two possibilities. Either my peculiar lenses as an oddly formed religious believer filter out the brilliant light radiating from the evidence, or the evidence for neo-Darwinian evolutionary theory is not as overwhelming as some would have it be.

It may be that the long shadow of the Galileo affair makes the theological community skittish about challenging assertions on behalf of “mainstream scientists.” Galileo should rather teach us to be unafraid to consider the data and their implications, notwithstanding fundamentalist (or, in Dean Rosengarten’s words, “reactionary”) claims - religious or secular - that one interpretation is orthodox or “mainstream.” Before doing our best to show that our religious commitments are not undone by the claims of some body of scientists, we ought at least
to consider the weight of the evidence for ourselves. The old saw has it that, “no mainstream biologist today doubts Neo-Darwinism’s basic tenets.” Very well. Until I am persuaded by arguments from the data, I will remain outside the mainstream.

I wrote an essay recently, entitled
<http://www.cs.utexas.edu/~kuipers/opinions/electrons-vs-fairies.html> Why do we believe in electrons, and not in fairies?, that I would like to refer you to. It tries to clarify the difference between scientific and non-scientific theories.

Then I read Rev. Mees' essay on Sightings (9/8), discussing quotes he found in evolutionary biology textbooks and how they drove him into the Intelligent Design camp. I have long felt that some scientists believe a kind of "religious atheism" that is as much a matter of faith as any deist religion. Advocating "religious atheism" in a science textbook is as inappropriate as advocating evangelical Christianity there.

I have extended my essay with the results of my further investigations. A brief summary ...

Of the three books that Rev. Mees cites, two are not textbooks at all. They are personal/popular/philosophical essays, in which expressions of personal faith are entirely appropriate. The third is a textbook, but the cited quote does not appear in the current (third) edition. (Perhaps the author has learned to separate his personal faith from his teaching.)

In the process of this exploration, I found a detailed review of textbooks claimed by a leading ID authority to be promoting atheism. [You can find the link to that review in my essay.] That reviewer shows that, contrary to the ID claims, those textbooks are very careful to separate science from religion, and do *not* cross the line to advocating a "religious atheist" position. He provides extensive quotes from the textbooks, so you can judge for yourself.

So, let me encourage you to look more deeply into this.
Telling the Design from the Designer

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Date: 09-14-05 11:37

Cardinal Schoenborn’s *New York Times* column has spawned a range of articles in a range of venues by scientists, philosophers, and others concerning “intelligent design” (ID). It is unclear, however, that sufficient attention has been given to the theological doctrine that the phrase “intelligent design” apparently invokes – namely, divine providence. It seems to me that some rehearsal of the history of this doctrine, and in particular of its importance to theology during and following the Enlightenment, illuminates in important ways the issues surrounding the debate about ID.

Christian theology has always been interested in characterizing divine activity in the world, to the degree that it can be partially understood by humans. The classic formulation of this has been a three-part structure of creation, providence, and eschatology. Providence describes God’s activity in the created world we inhabit, a world which will be concluded at the time of the eschaton or final judgment. As the middle term, providence bears explicit relation to the other two: it is understood to be both an extension of the order implied by the creation, and an anticipation of the forthcoming kingdom of God. Thus the idea of providence reflects both the nature of creation, and the values that will mark the fully realized reign of God. As such it is the linchpin in any sense of a divine design for the world.

The perennial dilemma within the doctrine of providence itself has to do with the inherent tension between divine government and human freedom. Thomas Aquinas’ classic formulation – that God causes not only our will but our willing, and humans act for the good in cooperation with divine grace – came under severe pressure in the sixteenth century with the Reformation. There the debate crystallized in the disagreement between John Calvin and Jacob Arminius: Calvin argued for a double predestination in which humans are elected to salvation or damnation, but claimed that this does not compromise their creaturely freedom; Arminius repudiated what he took to be the claim that God actually could damn individuals as part of the divine government, arguing instead that Christ’s death and resurrection make salvation available to all who accept it.

In the eighteenth century, the idea of providence was further tested by the full emergence of historiographical standards of evidence that emphasized human causality, and introduced the prospect of correlation or chance as an alternative to causal explanation. Edward Gibbon’s *Decline and Fall of the Roman Empire*, one of the great historical works of that or any century, openly disdains providential accounts. Those who sought to retain some semblance of the classic idea of providence – a notably wide range of thinkers, including deists such as John Toland, theologians like Bishop Butler and novelists like Henry Fielding and Samuel Richardson – tended to do so by collapsing it either into creation (making the natural order of things the basis of the divine government) or into eschatology (making the final judgment the moment when the divine government is decisively made manifest).

Darwin’s *Origins of the Species* and its introduction of the idea of “random selection” is usefully and correctly, but too infrequently, understood as having relevance to the doctrine of providence. Cardinal
Schoenborn recognizes this, as do at least some of the proponents of ID. While in many respects the substance of their advocacy of ID is little more than an amplification of creationism, it is the case that at least nominally they shift the religious corollary from biblical literalism to theological dogma. Whether this is religiously astute or disappointing or reprehensible of course will depend on one’s theological position. Be that as it may, understanding why ID advocates protest “neo-Darwinism,” and the association of their position with that of creationism, hinges on this shift.

For all the internal theological debates about providence, there is throughout the history of the doctrine this constant: it is always understood retrospectively. The classic formulation of this is found in Augustine’s *Confessions*, where the Bishop of Hippo avows that God “led me unknowingly, that knowingly I might be led.” The first Christian autobiography underscores both the existence of a providential plan, and the incapacity of human intelligence to comprehend it as it happens: only after the fact, when we see how events fell out, are we able to detect the hand of God. In this respect, the second half of Augustine’s formulation is nuanced: the “knowingly” in fact refers, not to a confident attribution in the present tense, but to the faithful affirmation that, even though he cannot know the specifics, Augustine is confident that what happens reflects the divine will.

Evolution like providence is adduced retrospectively. We see how an organism has evolved, just as we see how God has shaped particular events. So in addition to the explicitly apposite nature of “random selection” and “divine design,” a common vantage point informs each and serves to sharpen the terms of their engagement. As a result cosmological physics appears much more theologically congenial, at least on first blush, than evolution.

This serves, I suggest, both to show why advocates of ID approach the debate the way they do, and why there are in fact common issues and common ground for debate across religion and science. It is not so simple, as some scientists and some theologians suggest, to dismiss one and accept the other. Scientists who suggest the utter antipathy of their field to religion do a real disservice to theology. Theologians who wish to suggest that there is in the end no serious issue at stake do a real disservice to science.

All of which argues, in the end, for a much more serious conversation than Cardinal Schoenborn on the one hand, and Professor Dawkins on the other, appear to seek. Scientific discovery ought to influence theology, and it is no good to suggest that the details of evolution can simply be subsumed under an overarching articulation of the deity that bears no recognition of facts that have overwhelming strong evidence behind them. Theological wisdom ought to influence science, and it is no good to suggest that the details of evolution simply settle the parameters (ever more narrowly) of principled theological reflection on the origins, sustenance, and final meaning of human life. Scientific fundamentalism is no more attractive, and just as pernicious, as religious fundamentalism, even though the latter gets more play in the newspapers. Both constitute, in the end, reactionary religious sensibilities in that they posit a world whose complexity of meaning is reduced in order to control. Far better to understand science and theology as making common cause in grasping aspects of the truth about the world of which we are, for better and for worse, the stewards. Science and religion are each sufficiently robust to endure such a formulation, and to be informed by the other without compromising different internal standards of evidence and argument. And it is equally sure that the truth needs both religion and science for its fullest and most apposite articulation.