



Walter R. Thorson

Article

A Response to Douglas Groothuis

Walter R. Thorson

I think his [Groothuis'] proposal to teach "intelligent design" (ID) in the secular university is a bad idea ... [M]ost arguments for ID are not concerned with science. They offer a superficial "answer" to people who do not know much ... about the subject.

Douglas Groothuis' proposal to make "intelligent design" (ID) the focus of a Christian apologetic in the university community is a bad idea. It would publicly associate Christianity with debatable claims that design arguments are scientific, and also with hostile attitudes to scientific tradition. Dismissing "naturalism" as a presupposition of science is a particularly questionable move. In this response to Groothuis' article, I argue, first, that the continuing controversy over ID has some disturbing parallels with earlier controversies over recent-earth creationism; second, that while there are a few legitimate arguments for ID, most are superficial, both scientifically and philosophically. The ambivalence or hostility of most ID arguments toward any kind of biological evolution is also significant. I argue that while ID is legitimate as natural theology, it is certainly not an agenda for scientific enterprise; in a brief account of the ID movement, I survey various arguments for ID. Finally, I discuss why attacking "naturalism" is misguided; in the long run, it damages the credibility of those arguments (such as Michael Behe's) that have some scientific merit.

The PSCF editor asked me to review an earlier version of the article by Douglas Groothuis. I entirely disagree with Groothuis' thesis, but did not think it right to reject the article. I proposed instead to give a critical response to any revision making the same arguments. I also explained to the author why I think his proposal to teach "intelligent design" (ID) in the secular university is a bad idea—and suggested some further reading about the issues.

The article published here shows little evidence that issues raised have been considered. A brief comment in

the section "Intelligent Design at the University" dismisses one aspect of my critique in a single hand-waving sentence. I also object to the *misrepresentation* of my own views presented there: I am implicitly described as a Christian theist "committed to Darwinism as an adequate theory of life and its development" (p. 238). Had Groothuis read any of my articles on the subject—or even comments made in my review—he would have realized that this statement is false. He seems to have been so convinced of his own views that he just did not bother to examine my remarks further.

In this response, I first discuss the tradition of the ASA in relation to the legitimacy and methodology of science. Brief comments on biological evolution and the scientific context for the ID controversy follow; then I give a short account of the ID movement and remark on the naive dismissal of "naturalism" in science by ID advocates.

Walter R. Thorson was professor of theoretical chemistry at the University of Alberta (1968-1994), and adjunct professor of the Philosophy of Science at Regent College, Vancouver, BC, for 25 years. He is a (retired) Fellow of the American Physical Society and of the American Scientific Affiliation. Since retiring in 1994 he has written extensively on issues in science and theology and the philosophy of science, in articles published in PSCF and elsewhere. In the continuing debate over "intelligent design," he has been particularly concerned to defend the theological legitimacy of "naturalism" as a presupposition of science. Walter and his wife Mary reside in Calgary, Alberta, Canada, close to their two children and their families.

After some years, I have concluded that most arguments for ID are not concerned with *science*. They offer a superficial “answer” to people who do not know much (and do not care much) about the subject. That is why it would be a disaster to make ID a standard-bearer for Christian thought in the university.

I have spent much of my life in a serious personal commitment to the legitimacy of science, and know something about its practice, authentic tradition, and philosophical presuppositions. As a Christian who takes science seriously and knows something about it, I am embarrassed by other educated Christians who, having little or no experience of the scientific enterprise, nevertheless feel fully qualified on purely philosophical or theological grounds to offer authoritative opinions on the subject in *PSCF* and elsewhere.

The Tradition Established by the ASA

As Ronald Numbers has shown in his excellent and carefully written book *The Creationists*,¹ the history of the American Scientific Affiliation before ~1950 was troubled by a long controversy over recent-earth creationism; many ASA members at the time were committed to a literal reading of the biblical creation accounts. Eventually, ASA’s leadership (and a majority of its members) affirmed their commitment to a scientific understanding of the physical world, and publicly declared that they did not consider recent-earth creationism to be scientifically valid. Those who disagreed with this position severed their connection with ASA and formed several organizations (associated with the names “creation science” or “creation research”) dedicated to promoting recent-earth creationism. In retrospect, this was a watershed for the ASA—especially its clear affirmation that scientific inquiry and methods (including the implicit acceptance of “naturalism” as a presupposition of *physical* science) can lead to truth about creation. ASA’s positive influence on generations of Christians working in the sciences stems at least in part from the courage of its leadership in establishing this commitment to the legitimacy of science.

Specific issues in the 1950s’ controversy in ASA over recent-earth creationism have little to do with most arguments regarding ID. Neither Groothuis,

nor any of the ID proponents with whom I am acquainted, actually rejects the evidence of physical science for a universe about 15 billion years old and an earth approximately 4.7 billion years old—though arguments some ID proponents have made against the philosophical legitimacy of “naturalism” in science *might* be so interpreted. Nevertheless, controversy over ID within ASA and in *PSCF* presents deeply disturbing parallels to the earlier controversy over recent-earth creationism.

A commonly stated view of many scientists is that ID is “just another form of creationism.” An unhappy aspect of Groothuis’ approach is his willingness to draw up battle lines with science on that basis. But making ID a public issue in the university would not lead to a better understanding of the issues; it would only become a further embarrassment to effective Christian apologetics. While there are a few legitimate arguments that can be made about ID (cf. “A Survey/History of ID Arguments” below), most of what is said on the subject is just a new kind of creationism—predicated on the same hostility to the scientific tradition as the old kind.

I do share Groothuis’ view that we should not merely accept the materialist prejudices of many in the scientific establishment. Certainly, Christians affirm that God is the Creator of all things, visible and invisible, and this necessarily implies a different view of the legitimacy and scope of science than materialists commonly hold; it also implies a very different understanding of “naturalism.” I have written some key articles on this particular subject, two of which were published as a tandem pair in *PSCF* six years ago.² (I called Groothuis’ attention to these, but he seems not to have explored the points made in them.) In the same issue, there are responses to my articles from twelve very different people, and a brief concluding reply on my part. Apart from his proposal to teach ID in the university, there is nothing about ID in Groothuis’ article that was not already discussed in that issue of *PSCF* by myself or others.

What concerns me most here is the harmful effect on ASA and *PSCF* of continuing controversy over ID. As in the 1950s, many ID advocates are skating pretty close to the same attitudes to science and scientific inquiry that mark “recent-earth creationism”—and determined its eventual, discredited future. If you are going to argue for ID, you should

Article

A Response to Douglas Groothuis

first be very sure that you know enough about science and scientific tradition to make a competent argument. Unfortunately, many ideas Groothuis presents in his article do not meet that standard, and Groothuis himself does not know enough about the issues entailed to recognize that. As a practical matter, I do not think *PSCF* should be wasting space on superficial arguments for ID.

Biological Evolution as the Nexus of Debate over ID

The effect (and perhaps the intent?) of many arguments for ID is to discredit *all* aspects of biological evolution as a framework for biology. Oddly, many people who argue for ID as “the answer” to materialism in science hold the same view of biological evolution as the materialists they oppose. In particular, they assume that anyone who believes that biological evolution has a factual, scientific basis must also be convinced of the adequacy of neo-Darwinist theory. I have already pointed out that Groothuis’ article misrepresents my own views on this matter.

Phillip Johnson observed in the 1990s that there are many different meanings to the word “evolution,” and people who have a stake in promoting the idea find it convenient to play a kind of “shell game” with these. Johnson was thinking of the proponents of a materialistic and reductionist neo-Darwinism when he made this point—people like biologist Richard Lewontin, whom Groothuis cites in his article as representative of the views of “scientists” in general. (Richard Dawkins is not really a working scientist, but a dogmatic proponent of atheism on alleged scientific grounds; see the brilliant critique of Dawkins’ views recently published by Alister and Joanna McGrath.³) But Johnson may not have anticipated the extent to which the same “shell game” is played by some IDers and other opponents of evolution.

Evolution as a “Fact”

There is a very weak sense in which evolution is a scientific fact. A huge increase in both the variety and complexity of living things has occurred since the first primitive life forms appeared some 1–2 billion years ago. This claim is based on lots of solid information, both from the fossil record and from the study of genetic information in present living things. Most of the increase in variety and complexity occurred about 570 million years ago, in “the Cam-

brian explosion.” Since then, while there has been some evolutionary development, it has been relatively limited in extent compared to that in the original “explosion,” and some biologists even argue that the process has been neither gradual nor continuous. It is scientifically reasonable to argue further (on the basis of DNA and other molecular evidence) that this “unfolding” occurred by biological descent from a common ancestor or limited group of ancestors; and finally, that natural selection by the environment for advantages conferred by genetic change is an important driving force in the process.

It is crucial to recognize what is *not* claimed here: apart from the hypothesis of common descent and the statement that natural selection by the environment plays an important role, no further assertion is made about the process or “mechanism” of evolution. We do not have *any* adequate theory of how evolution occurred.

Theories of Evolution—Neo-Darwinism in Particular

Current theories of evolution make much stronger claims. The dominant theory is neo-Darwinism, formulated earlier in the twentieth century: in addition to claims made in the “weak” definition of evolution, neo-Darwinism asserts that an adequate mechanistic theory of the process is provided by natural selection plus random genetic mutations plus lots of time. The claim that chance can adequately account for change is a critical issue. There is no convincing demonstration that mutations occur randomly, or that those which do so occur are constructive. The overwhelming majority of mutations are destructive and even lethal; the genetic system has an elaborate checking mechanism to weed some of these out.

I do *not* think neo-Darwinism is scientifically credible as an explanation of biological evolution. This opinion is shared by a great many thoughtful scientists, many of whom are not even theists—let alone Christians. This is why I particularly object to the way in which Groothuis (like many opponents of evolution) has played the “shell game” by assuming that belief in the “weak” claim of biological evolution and the hypothesis of common descent must also imply belief in neo-Darwinist theory. A good scientist can accept the evidence for the factuality of biological descent with variation from a common ancestor, while at the same time recognizing that no satisfactory theory of the process yet

exists; it is a problem still to be solved. I find it strange that opponents of evolution, including many who argue for “intelligent design,” cannot seem to comprehend this open state of affairs, and demand alternative “answers” instead. In doing so, they display their ignorance of what science is like—an open, unfinished inquiry into the “book of nature.”

People generically opposed to biological evolution need to recognize that special creation of individual species, often derived from literalist readings of Genesis 1, *cannot* be reconciled with the scientific evidence. Belief in special creation demands that one also believe that information from the fossil record or the study of genetic material is in some way misleading, only seeming to appear as it is interpreted. So far, only recent-earth creationists have advocated such a theologically dubious and capricious view of God.

It is therefore pertinent to ask whether belief in ID, or asserting it as a “Christian or theistic alternative” to current scientific accounts, is motivated by deep-seated opposition to evolution in *any* form (and asserting special creation in its place). In a recent article, I have argued that opposition to evolution is rooted in an unexamined philosophical commitment of evangelical Protestant theology to Aristotle.⁴ It is Aristotle’s philosophy, not the Bible, that teaches the fixity of biological species—and Aristotle’s reasons for that doctrine are extremely problematic theologically. When evangelicals insist (as many do) that the phrase “after its kind” in Genesis 1 implies the fixity of biological species, they are really insisting on Aristotle’s doctrine, not what the biblical text actually says (such a rendering of the text also happens to be bad exegesis). But Aristotle has already been proved wrong about a lot of things in creation—starting much earlier with physical science.

I should emphasize that most ID advocates are much more open to scientific evidence and reasoning than recent-earth creationists. The fact that so many ID arguments are focused on the problem of information in the DNA “code” nicely illustrates this difference—as does the fact that most ID proponents accept the validity of modern physics/cosmology. The ID movement is somewhat ambivalent about biological evolution; a few clearly accept it in a “weak” sense as a valid paradigm for biology

(e.g., biochemist Michael Behe). That is why I have emphasized the incompatibility of “special creation” with the scientific evidence—and with any evolutionary paradigm. I believe it is important for people in the ID movement to recognize this incompatibility—and come to terms with it in thinking about biology.⁵ For example, if someone argues for ID, and the real agenda behind the argument is to maintain belief in special creation, it will honor the cause of truth to acknowledge that—and will also help those hearing such arguments to know where the speaker is really going. The intent and grounding of particular arguments for ID matter a great deal; sound philosophical judgment and scientific competence are both required.

A Survey/History of “Intelligent Design” Arguments

Perhaps the first modern presentation of an argument for ID appears in a book by Thaxton, Bradley, and Olsen entitled *The Mystery of Life’s Origin*.⁶ A few years before publication of that book, Charles Thaxton shared the teaching of a summer course on issues in science and philosophy of science at Regent College in Vancouver, BC, with myself and Davis E. Young of Calvin College; I therefore had opportunity to know about ideas in Thaxton’s later work. A large class of arguments about ID ever since has been addressed to the same issue, namely, the problem of “chemical evolution,” or “origins-of-life” scenarios.

“Chemical evolution” is the name for a number of efforts in the second half of the twentieth century to account for the origin of the most primitive life forms using a purely mechanistic theory and starting with inorganic chemicals. The whole enterprise grew out of a rigidly mechanistic approach to biology, and for a time, in the period 1950–1990 or so, it became a kind of cottage industry among certain chemists and biologists. Research programs in this area assumed that life on earth is the result of a complex chemical accident—or rather a series of accidents building one upon another. The overall goal was to account for the high degree of information and functionality exhibited in genetic material (the so-called “DNA code”): elements in the program were to account, first, for the existence of primitive chemicals common to living things (e.g., elementary amino acids); second, for the higher-order organization of such materials in potentially active forms

Article

A Response to Douglas Groothuis

(polypeptide chains); finally, for the sophisticated, information-specific and functional structures in DNA that control synthesis of essential ingredients for life, such as proteins and enzymes. It is not my intent here either to describe this work in detail or to offer a detailed critique of it. Research on “chemical evolution” has now mostly been discontinued—because the outcome has been negative at every stage. It is even more significant that some of the scientists involved publicly recognized the project as a failure—in many cases, long before it received attention by ID proponents. From Thaxton’s presentation at Regent College in the early 1980s, the main lesson was that if one undertakes a scientific project with motivations philosophically inadequate to the task (in this case, mechanistic and reductionist assumptions), the result is likely to be some pretty poor science.

The failure of
a mechanistic theory of biology
does not lead us to infer design
as the best scientific alternative;
but ID is legitimate
as natural theology,
if it has a sound scientific basis.

Most arguments for ID are addressed to the origin of the information content in genetic material. Articles and books by William A. Dembski⁷ and Stephen C. Meyer⁸ are primarily concerned with this particular topic.

Meyer, whose academic training was in philosophy, devoted himself to an extremely thorough study of the chemistry and biology necessary to understand and evaluate the “chemical evolution” project. His study is somewhat more sophisticated than that of Thaxton et al.⁹ Meyer’s negative critique of the philosophical and scientific inadequacies of “chemical evolution” is accurate and constitutes a valid scientific contribution. His ensuing positive argument that the failure of a mechanistic and reductionist theory leads to inference of ID as the best explanation is much less convincing. I shared with Meyer and others the teaching of a course on “Naturalism and Design in Biology” at Regent College in June 2002; Meyer and I understand each other’s arguments and points of agreement and dis-

agreement fairly well. In my view, Meyer and other ID proponents need to leave open a significant “unexcluded middle” in thinking about biology. I have argued in a number of articles that the failure of a mechanistic theory of biology does *not* lead us to infer design as the best scientific alternative¹⁰; but ID is legitimate as natural theology, if it has a sound scientific basis.

The work of both Meyer and Dembski is predicated on the assumption that the only or best alternative to a mechanistic, materialistic, and reductionist “naturalism” is ID. I argue that a scientific response might begin instead by recognizing that (a) biological systems are organized logically toward function, a fact that suggests there is much more to understanding them than mechanism, and (b) until we have done a good deal more in exploring this kind of “naturalistic” thinking about how they are logically organized, it merely short-circuits a scientific approach to understanding them if ID is introduced as an alternative explanation. I have developed this argument in some detail.¹¹

Dembski’s approach to the same subject is more aggressive than Meyer’s—and illustrates clearly my concerns about short-circuiting scientific thinking. Dembski argues that ID is necessarily the only scientific alternative, given the failure of a purely mechanistic account, and claims to offer mathematical *proof* (!) that this is the case. He does not consider that there may be “naturalistic” but non-mechanistic alternatives to his arguments. I do *not* think his mathematical arguments are valid, or even mildly persuasive—a judgment I share with many fellow scientists. Unfortunately, Dembski’s work is really not addressed to scientists, but to an uncritical community of persons not generally qualified by experience or training to make scientific judgments. In short, I think Groothuis’ arguments are deficient for the same reason: they are not backed by enough historical and scientific judgment to give them substance.

Michael Behe, a professor of biochemistry at Lehigh University, is the other ID proponent whose work is cited by Groothuis.¹² Behe is concerned with the complexity of biological systems and the problem of their functionality. He shows by careful study of several systems, especially in the molecular biochemistry of eukaryotic cells, that biological organization is similar to that characterizing

machines. He introduces the idea of “irreducible complexity” in a biosystem: complex assemblies of components working together to achieve some essential function, such that, if even a single component is removed, this function is not merely impaired, but entirely disappears; and he infers design from the universal presence of such complexity in biological systems.

I have argued that “irreducible complexity” is an important scientific concept: It points directly to the fact that biosystems, like machines, are logically organized toward performing certain limited functions or tasks.¹³ The existence of such an organizing logic shows that biosystems cannot be understood purely in terms of the mechanistic concepts and assumptions adequate to the purely physical sciences. Something else *is* present—but we can still discuss it in a “naturalistic” framework. This idea is not new; it was first argued in the 1950s by Michael Polanyi.¹⁴

Darwin's Black Box was criticized by several people because Behe did not explore the possibility of naturalistic approaches to understanding the systems he discussed.¹⁵ A better treatment can be found in a second Behe work, *The Edge of Evolution*.¹⁶ In this book, Behe explores much more carefully what can and cannot be explained by a mechanistic Darwinism and shows in his discussion that he is thinking about the issues in a scientific context. Although he argues for ID, these arguments are given in a separate concluding chapter. While one may disagree with some details, it is clear that (1) Behe is fully committed to scientific understanding as his aim; that (2) he works within the framework of evolution in the “weak” sense as a paradigm for biology; that (3) he understands the open character of scientific inquiry; and that (4) he recognizes that a distinction must be made between science and natural theology. This is a far better approach to ID than the material Groothuis cites, and I commend it as possibly the best work in the genre yet written.

This discussion should make it clear that I remain open to arguments for ID—provided they are competent, made in a firm commitment to the legitimacy of science, and recognize that ID is natural theology, *not science*. There is a semi-permeable membrane between these two discourses, with an unspecifiable traffic between them; and each may be

fruitfully influenced by the other. But I am getting very tired of persistent, generic, and uninformed attacks on “naturalism” as a philosophical presupposition of science, which only reveal deep ignorance of both its history and subject matter. It is an unfortunate fact that most discussion of ID has so far only served to reveal what has been called “the scandal of the evangelical mind”—the scandal being that mostly, there *is* none.

Concluding Remarks on “Naturalism”

Groothuis' easy dismissal of *naturalism* as a presupposition of science is a key part of his argument. Here he follows Phillip Johnson and others in the 1990s who began promoting ID. Groothuis claims that ID is “legitimately scientific,” and that “it gives science another tool for empirical discovery” (p. 233). But I assert that these statements are false (or, perhaps, meaningless)—and suggest that persons who make such claims should instead get down to serious work on the alternative approaches to biology they imagine. There is no such thing as “ID science,” and no “ID scientists” to carry it on—and I believe there never will be.

In this response to Groothuis, I have focused more directly on the scientific issues, rather than taking up the philosophical issue of “naturalism” as a scientific presupposition. I have written extensively and carefully on the theological legitimacy of naturalism in science in *PSCF* and elsewhere, and it is pointless merely to repeat those arguments here. For me, the dismissive attitude to “naturalism” in science adopted by Groothuis (and some other proponents of ID) presents the most alarming parallel with recent-earth creationist thinking. I believe it has deep internal contradictions.

To expose these, we should ask whether the tradition established for the physical sciences by Christians like Robert Boyle, Isaac Newton, and others more than three hundred years ago (“the mechanical philosophy”) was fundamentally mistaken on philosophical or theological grounds? While deploring “the monopoly of naturalistic explanation in the sciences” (p. 233), Groothuis, like most ID proponents, manages to sidestep the obvious fact that in the physical sciences, “naturalism” has proved entirely apt to the subject matter for more than three centuries. If there were some serious philosophical

Article

A Response to Douglas Groothuis

or theological defect in “naturalism” as a presupposition of physical science, I would think it might have become evident by now. On the contrary, the naturalistic assumptions of physical science are entirely appropriate to its limited subject matter. The fact that ID advocates have nothing important to say about “naturalism” in physics points to a major flaw in their thinking about biology.

To a person who understands
the historical tradition of science ...,
simply dismissing “naturalism” ...
is the most serious defect of
ID arguments.

The obvious reply is that there are fundamental differences between the behavior and logical organization of living things—and the mechanistic phenomena the physical sciences describe. This is quite true, and also very important—and I have strongly emphasized that fact in previous articles.¹⁷ But “naturalism” in science is *not* the cause of the problem. A true biological science does not need a radical shift from naturalistic to theistic explanations, but a more modest change: from the mechanistic and reductionist paradigms proper to physics, to a set of (naturalistic) paradigms proper to biology’s subject matter. Both physics and biology are concerned with “mundane” aspects of the world—things routinely subject to the rational scrutiny of human beings in their vocation of cultivating and caring for creation. Neither subject deals with the miraculous or supernatural—the sorts of things that specifically require an appeal to divine agency or divine intention to make them comprehensible. It is a category mistake to argue that in studying biological creation we must introduce direct surrogates for divine agency in our explanatory paradigms. Saying “God did it” merely avoids thinking about the problem; in the ASA, such intellectual laziness should always be answered, “But how?”

To a person who understands the historical tradition of science from the seventeenth century onward, simply dismissing “naturalism” as a presupposition is the most serious defect of ID arguments. One just does *not* lightly discard a historically well-established tradition of thought about

creation—one begun in the first place by devout and intelligent Christians. For me this is not simply a matter of historical or antiquarian interest. The legitimacy of present scientific tradition is an important theological and philosophical matter. If the tradition is mistaken in its fundamental presuppositions, the place to start “fixing” it is physical science—not just biology.

In conclusion, I suggest that Groothuis and others with like concerns need to understand science and the historical tradition of science much more competently, and, above all, more sympathetically and positively, before they undertake to “fix” it. Controversy over ID well illustrates C. P. Snow’s concern that ignorance of science and its tradition by influential segments of society has potentially dangerous consequences. I believe that a deeper understanding of the historical, philosophical, and scientific issues involved would dampen Groothuis’ enthusiasm for this quixotic proposal. *

Notes

- ¹Ronald L. Numbers, *The Creationists: The Evolution of Scientific Creationism* (New York: Knopf, 1992; paperback ed., Berkeley, CA: University of California Press, 1993).
- ²Walter R. Thorson, “Legitimacy and Scope of ‘Naturalism’ in Science. Part I. Theological Basis for a ‘Naturalistic’ Science,” *Perspectives on Science and Christian Faith* (PSCF) 54 (2002): 2–11; and, as a representative proposal for a “naturalism” more appropriate to biology than the mechanistic/reductionist paradigms adequate for physical science, see Walter R. Thorson, “Legitimacy and Scope of ‘Naturalism’ in Science. Part II. Scope for New Scientific Paradigms,” *PSCF* 54 (2002): 12–21.
- ³Alister McGrath and Joanna Collicutt McGrath, *The Dawkins Delusion? Atheist Fundamentalism and the Denial of the Divine* (Downers Grove, IL: InterVarsity Press, 2007).
- ⁴Walter R. Thorson, “*Telos* in Biology: Steering between Aristotle and Darwin,” *CRUX* 39 (June 2003): 22–33. *CRUX* is a quarterly journal of thought and opinion published by Regent College, Vancouver, BC.
- ⁵Uncritical adherence of many evangelicals to Aristotle’s mistaken dogmas about creation is partly the result of a lingering scholasticism in most conservative theological training (Catholic scholars are already quietly rethinking their own Thomist traditions in this respect). It will be a great help in reading Scripture if we can rid ourselves of such unnecessary medieval baggage; what does Genesis 1 *really* have to say about biology?
- ⁶Charles B. Thaxton, Walter L. Bradley, and Roger L. Olsen, *The Mystery of Life’s Origin: Reassessing Current Theories* (New York: Philosophical Library, Inc., 1984).
- ⁷William A. Dembski, *Intelligent Design: The Bridge between Science and Theology* (Downers Grove, IL: InterVarsity Press, 1999). There are other articles and books since by

the same author, but the work cited here contains all Dembski's significant arguments to date.

⁸See, for example, Stephen C. Meyer, especially in two articles: (1) "DNA by Design: An Inference to the Best Explanation for the Origin of Biological Information," in *Rhetoric and Public Affairs* 1, no. 4 (1998): 519-55; (2) "Evidence for Design in Physics and Biology: From the Origin of the Universe to the Origin of Life," in *Science and Evidence for Design in the Universe* (San Francisco: Ignatius Press, 2000), 53-112. Cf. also Stephen C. Meyer, "DNA and other Designs," in *First Things* 102 (April 2000): 30-8.

⁹Thaxton, Bradley, and Olsen, *The Mystery of Life's Origin*.

¹⁰For some discussion of philosophical issues in relation to Meyer's views, see Walter R. Thorson, "Naturalism and Design in Biology: Is Intelligent Dialogue Possible?" *PSCF* 56 (March 2004): 26-36.

¹¹Compare Thorson, "Legitimacy and Scope of 'Naturalism' in Science. Part I"; Thorson, "Legitimacy and Scope of 'Naturalism' in Science. Part II"; Thorson, "Naturalism and Design in Biology."

¹²Michael J. Behe, *Darwin's Black Box: The Biochemical Challenge to Evolution* (New York: Free Press, 1996).

¹³Thorson, "Legitimacy and Scope of 'Naturalism' in Science. Part II," *PSCF* 54 (2002): 12-21.

¹⁴Michael Polanyi, *Personal Knowledge: Toward a Post-Critical Philosophy*, cf. Part Four, chapter 11, "The Logic of Achievement" (Chicago: University of Chicago Press, 1981). Polanyi's approach to epistemology, based on the understanding that knowledge is held by *persons* in acts of *responsible commitment*, provides a better framework for thinking about and relating issues in science, philosophy and theology than most approaches familiar to evangelicals.

¹⁵Behe, *Darwin's Black Box*.

¹⁶Michael J. Behe, *The Edge of Evolution: The Search for the Limits of Darwinism* (New York: Free Press, 2007).

¹⁷Thorson, "Legitimacy and Scope of 'Naturalism' in Science. Part I"; Thorson, "Legitimacy and Scope of 'Naturalism' in Science. Part II."

CALL FOR PAPERS AND POSTERS

American Scientific Affiliation Annual Meeting
July 31–August 3, 2009
Baylor University, Waco, TX

Exploring God's World of Endless Wonder

"Everything in the heavens and on earth is yours, O LORD ..." 1 Chronicles 29:11b, NLT

Confirmed Plenary Speakers

- Robin Collins, Messiah College
- Mario Beauregard, Université de Montréal, Canada
- Charles Duke, USAF (retired) and former NASA Astronaut
- Robert Mann, University of Waterloo
- James Tour, Rice University, Smalley Institute for Nanoscale Science and Technology
- Perla Manapol, NGO, Sustainable Rural Enterprise

Symposia Topics

- Christianity and the Possibility of a Multiverse
- Psychology, Neuroscience and Issues of Faith
- Science and Technology in Service of the Poor
- Sociology and Religion
- Our Place in God's Universe
- History and Philosophy of Science
- Ethical Issues in Science and Engineering
- Christian Stewardship and the Environment
- Origins
- Teaching Science
- Science, Imagination, and Faith
- Presentations by Students and Early Career Scientists and Engineers

Poster Session

- Open to all topics, including but not limited to students or young career scientists' research, whether or not the research has an explicit faith-science component

Details at www.asa3.org. Click on the link to the 2009 Annual Meeting.

Photo: NASA/CXC/Univ. de Liege/Y. Nael et al.

