Now, theism by itself does not seem to entail any observation statements, so it is at best weakly falsifiable. As Sober explains, the difficulty for theism concerns auxiliary hypotheses about God, that is, claims concerning what God is like and how he acts. To take one of Snoke's examples, he claims that if theism is true, we would expect there to be "many, daily, direct, miraculous communications from God" (p. 156), a prediction he takes to be falsified and that requires a modification of theism. However, this prediction only follows on the assumption of knowledge about how God would reveal himself to human beings, if he existed. But why suppose that Snoke or anyone else could *know* this? The problem with auxiliary hypotheses about God is that they are not independently confirmed or falsified. Is there any way of confirming or falsifying auxiliary hypotheses about God without presupposing theism? I raise these issues not to take a firm stance on them, but merely to suggest their complexity and cast doubt upon the idea that we can easily find falsifiable predictions for theism and Christianity.

Ever since Hume and Kant, natural theology has been on the defensive, only making a serious comeback in the last twenty-five years or so. Snoke welcomes natural theology as part of his evidentialist epistemology, and wants theism to subscribe to the "normal rules of evidential discourse" (p. 154). In our pluralistic world, this is an understandable and reasonable reaction. However, it is not clear that this is a move theism and Christianity can make, as the problems I have outlined show. Some serious issues concerning faith and reason still need to be addressed.

Notes

[1]On the Intelligent Design—Evolution controversy, see Massimo Pigliucci, "Design, Yes, Intelligent, No," *Skeptical Inquirer* 25, no. 5 (Sept.–Oct. 2001): 34–9; Niall Shanks and Karl Joplin, "Behe, Biochemistry, and the Invisible Hand," *Philo* 4, no. 1 (Spring–Summer 2001) available at the website <www.philoonline.org>; and *Skeptic* 8, no. 4 (2001), which has an excellent section on Intelligent Design. On fine-tuning arguments for the existence of God, see Theodore M. Drange, "The Fine-Tuning Argument Revisited," *Philo* 3, no. 2 (Fall–Winter 2000).

[2]"The Irrelevance of Proofs from the Biblical Point of View" in John Hick, ed., *The Existence of God* (New York: MacMillan, 1964), 209–10.

[3]For an introduction, see Theodore M. Drange, "Incompatible-Properties Arguments: A Survey," *Philo* 1, no. 2 (Fall–Winter 1998). Available at the website <www.philoonline.org>.

[4]For the critical side, see Michael Martin, *The Case Against Christianity* (Philadelphia: Temple University Press, 1991), and Walter Kaufmann, *The Faith of a Heretic* (Garden City, NY: Doubleday, 1961), an older work still worthy of careful study. For a defense of the Incarnation, see Thomas V. Morris, *The Logic of God Incarnate* (Ithaca, NY: Cornell University Press, 1986), and of the Atonement, see Richard Swinburne, *Responsibility and Atonement* (New York: Oxford University Press, 1989).

[5]See Elliot Sober, *Core Questions in Philosophy: A Text With Readings*, 3rd ed., lecture 9, "Is the Existence of God Testable?" (Old Tappan, NJ: Prentice Hall, 2001). For a much fuller and more sophisticated treatment, see Elliott Sober, "Testability." *Proceedings and Addresses of the American Philosophical Association* 73 (1999): 47–76. Available at the website <philosophy.wisc.edu/sober>.

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Choice of Research Topic

Although I am now retired, I was for many years head of a research group and chairman of a university department of electrical engineering. I was therefore particularly interested in the recent issue of *Perspectives on Science and Christian Faith* (53, no. 4 [December 2001]) reporting on a conference dealing with the choice of research projects by young graduates and post-docs. I have to say that I found the advice offered rather disturbing.

My chief cause for concern was the overriding importance attached to individual choice. My experience suggests that a fulfilling career in research generally requires team work. It may be that a few outstanding scientists work best in isolation, although I doubt it. But the creativity of most ordinary research workers is enormously enhanced by regular discussion with colleagues. The conference did not mention that giving is the other side of receiving. In this connection, I found the advice on choosing a supervisor to further one's career somewhat distasteful.

Nor do I like the idea of encouraging research workers to live from grant to grant. In my experience, the financing of research is best left to the head of a research group. Younger members need to be protected from commercial pressures so that they can give themselves unreservedly to the quality of their work and the enjoyment of it.

I fear that much of the advice given at the conference may increase the perception of science as a self-regarding pursuit and may strengthen the postmodern backlash against it.

I have been an appreciative reader of *PSCF* for many years and hope you will forgive the criticism.

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A Reply to the Dialogues

The March 2002 issue of *PSCF* contains a dialogue concerning science, naturalism, biology, and design.[1] Walter Thorson argues for a new definition of naturalism in science, with the unstated assumption that evolutionary biology would be included in such a science.[2] Although biology is usually classified as a science and biologists use the scientific method for investigation, the biochemical evolution of the first cell and macroevolution are supernatural. Uniting evolutionary biology with naturalistic science joins two mutually exclusive categories.

If science is defined as the study of natural things and natural processes in which supernatural causation is absent, evolutionary biology is not scientific. If science is defined as the study of the physical universe in which causation could be supernatural, evolutionary biology would be scientific. The two sets of definitions are functionally equivalent if God does not exist. Since the large majority of scientists accept a definition of science that excludes supernatural causation, such a definition of science should be accepted as the best working definition.

Thorson wrote: "Theological reflection on creation is entirely legitimate, but must be clearly distinguished from the mundane study of creation with which science is concerned." To be precise, science is the study of the product of creation. The act of creation is supernatural. The product of creation is natural. In parallel fashion, the act of macroevolution is supernatural. The product of macroevolution is natural. Biology is the study of the product of macroevolution.

The biochemical evolution of the first cell and macroevolution are supernatural. The probability of naturalistically or randomly assembling a small protein composed of 100 amino acid residues is about I chance in 10^{65} per try.[3] Less than 10^{50} tries have existed over the last 3.5 billion years, because less than 10^{50} proteins have existed on Earth during that entire period. The probability of naturalistically assembling just one necessary, functional small protein by using every try available is about one chance in 10^{15} or one chance in a million billion [$10^{-65} \times 10^{50} = 10^{-15}$].

Thorson wrote: "[W]e need a new 'naturalistic' biological science which is more than the application of physical science to biosystems." A naturalistic science is proper for the study of microevolution, since the DNA in microevolution already exists and already functions. A naturalistic science is not proper for the study of the biochemical evolution of the first cell and macroevolution since they involve the supernatural creation or supernatural assembly of functionally new DNA.

Thorson desires science to be naturalistic because he sees God as transcendent. God is not transcendent just because his methods are obscure. In evolutionary biology, God is also immanent. An example might suffice.

> A defined high-energy photon is generated and streaks through space for 100 years. At the right moment in time, a man, of his own volition, runs for a fly ball, stumbles, and wipes out on the grass. As he lies sprawled on the ground, the high-energy photon penetrates one of his sperm cells and energizes and alters DNA at a precise location while in a specific spatial orientation. The sperm cell, which contains the DNA altered in a manner preordained by God, fertilizes an egg. The two form the DNA component of a child woven together by God in the womb of the mother.[4]

God is immanent in the details of evolutionary biology, for he said, "Who gave man his mouth? Who makes him deaf or dumb? Who gives him sight or makes him blind? Is it not I, the Lord?"[5] Our inherited make-up is a personal gift from God.

Thorson seeks a biologic "a logic controlling achievement of certain tasks or *functions*." For both natural and metaphysical reasons, the bio-logic is not discoverable through scientific investigation.

The bio-logic is not discoverable for the following natural reasons:

1. A bio-logic is unique for each protein and each enzyme. Physicists can experimentally approximate the physical-logic of simple entities because they are uniform and contain mundane information. A billion oxygen molecules exhibit similar behavior and interact uniformly. A billion proteins and enzymes exhibit diverse behavior and each interacts uniquely.
2. The comparative study of fossils, homologous structures, proteins, and DNA provide no information for determining the origin of the bio-logics.
3. Since science cannot sufficiently explain the bio-logic of even one small enzyme, it is totally incapable of determining the entire bio-logics.[6]

The bio-logic is not discoverable for the following metaphysical reasons:

1. The bio-logic of the protein or enzyme resides in the purpose and design of God that precedes the initial appearance of the protein or enzyme.
2. Since the bio-logic arises from a supernatural purpose, the total bio-logic must be appropriated by supernatural revelation.
3. The bio-logic arises from a supernatural concept of function, which culminates in glorifying God.

Therefore, Thorson's bio-logic is not achievable. On the other hand, the intelligent design proposed by William Dembski is also problematic. Intelligent design cannot differentiate between macroevolution by intelligent design and progressive creation by intelligent design. Comparative studies of fossils, homologous structures, proteins, and DNA do not differentiate between them. Scientific experimentation cannot differentiate between them because they both involve supernatural causation.

Proponents of intelligent design make a fundamental error in strategy when they attempt to include intelligent design in a science curriculum. No study of biological origins, including intelligent design, is scientific. A more fruitful approach for the intelligent design movement would be to show that the naturalistic biochemical evolution of the first cell and naturalistic macroevolution are highly irrational scientific hypotheses, which also need to be excluded from a science curriculum. Intelligent design, the naturalistic biochemical evolution of the first cell, and naturalistic macroevolution should be transferred to some other curriculum such as philosophy, religion, or to an entirely new course.

Notes

[1] *Perspectives on Science and Christian Faith* 54, no. 1 (March 2002).
[2] Walter Thorson, "Legitimacy and Scope of 'Naturalism' in Science," *Perspectives on Science and Christian Faith* 54, no. 1 (March 2002): 2–11.
[3] H. P. Yockey, "A Calculation of the Probability of Spontaneous Biogenesis by Information Theory," *Journal of Theoretical Biology* 67 (1977): 377–98; and J. F. Reidhaar-Olson and R. T. Sauer, "Functionally Acceptable Substitutions in Two a-Helical Regions of Repressor," *Proteins: Structure, Function, and Genetics* 7, no. 4 (1990): 315.
[4] See: Psalm 139:13
[5] Exodus 4:11
[6] Yockey; and Reidhaar-Olson, 315.

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