

possibilities? Is it a question of either completely overpowering the creature or no intervention at all?

A fully sovereign God can certainly have as intimate a relationship with his creation as he sees fit, but without binding himself to arbitrary principles like “never act intrusively.” I agree with Van Till that God’s *usual* way of acting in the creation is through “natural” processes, and I have come to believe this because of the human freedom which must necessarily be linked with the possibility of genuine faith and love. However, it certainly does not follow that God *inherently cannot* introduce new information into his creation whenever he wants to do so. As I argued before, there is no reason to believe a “functional-integrity” mode of creation to be more suitable or worthy for God than one using a continuous intimate but sovereign relationship using insertions of information during an evolving creation which didn’t start out “all set” at the big bang. Why should anything be “lacking” in a creation God decided to perform not all at once? The “perfect-all-at-once” misconception is one of the basic errors of young-earth creationism.

No theist doubts that, according to the Bible, God sometimes does intervene in human affairs in response to prayer, good or evil acts, and other decisions of his creatures endowed with free will. However, none of this needs to be described by Van Till’s negative characterization of “interventions.” Often, there may not even be any *discernable* “supernatural” aspect. God’s action is perceived by faith, not science.

My proposal of God’s “hidden options” is subject to further discussion and possible modification.

### Notes

<sup>1</sup>P. Rüst, “Creative Providence in Biology,” *PSCF* 53, no. 3 (September 2001): 179–83.

<sup>2</sup>H. Van Till, “Does God Choose Among Hidden Options?” *PSCF* 54, no. 1 (March 2002): 67–70.

<sup>3</sup>asa@calvin.edu; with archive at <http://www.calvin.edu/cgi-bin/archive>

<sup>4</sup>H. Ross, *Big Bang Refined by Fire* (Pasadena, CA: Reasons to Believe, 1998), 13.

<sup>5</sup>P. Rüst, “*Spezielle und allgemeine Evolutionstheorie: Fakten und Spekulation*,” in: *Zur Diskussion um Schöpfung und Evolution*, eds. E. Gutsche, P. C. Hägele and H. Hafner (Marburg, Germany: Symon & Wagner, 1984), 59–115; P. Rüst, “The unbelievable belief that almost any DNA sequence will specify life,” Conference “Sources of Information Content in DNA,” Tacoma, WA (1988); P. Rüst, “How has life and its diversity been produced?” *PSCF* 44, no. 2 (June 1992): 80–94.

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### Response to Moorad Alexanian, “Humans and Consciousness”

In response to Moorad Alexanian’s letter (*PSCF* 54 [March 2002]) regarding my communication (*PSCF* 53 [June 2001]), I am quite thankful to hear from my colleague on the other side of the scientific spectrum. As psychology is generally

treated as a “soft” science with physics being the hardest of the “hard” sciences, his comments reveal some of the differences between our disciplines. This is one of the wonderful things about the science of human consciousness; we all have something meaningful to contribute to the conversation. Alexanian’s critique reveals that questions about human consciousness can fall into ontological and epistemological categories as well as theological ones. This further illustrates the necessity of interdisciplinary dialogue on this subject.

With regards to his epistemological concerns, Alexanian comments that “consciousness cannot be determined or measured with physical devices and so it is not the subject matter of science.” Defining the playing field and rules is a necessary part of this research. However, what constitutes a physical device for a physicist is quite different for a psychologist. This is, not surprisingly, a matter of concern for many in my discipline. Does a psychological test (i.e., IQ test, Myers-Briggs, MMPI) count as a physical device? Some would argue yes, some no. As a psychologist with a limited understanding of particle physics, measuring sub-atomic particles looks as curious as a Rorschach analysis might to a physicist. The standards for what qualifies as a physical device are, in many ways, discipline defined. Nonverbal responses and verbal self report have long been considered an important tool in psychology’s investigation of consciousness (i.e., signal detection theory). If we take a physicalist view of consciousness, then brain waves would certainly be considered a valid measure (as long as consciousness is equated with neural firing). But it is impossible to address the questions of methodology without including a discussion of the nature of consciousness.

To address the issue of ontology, the main points of the letter get to the question of substance dualism. If we maintain that consciousness (or soul) is of fundamentally different “stuff,” and that science is *a priori* disqualified from measuring that “stuff”; then I think Alexanian’s comments cut to the quick of any science of consciousness. It just is not possible. If we maintain, however, that consciousness is not of different stuff or that our definitions of what Nature is should be expanded to include the spirit-stuff as a primitive (i.e., Chalmers<sup>1</sup>), then a science of consciousness is not only possible, but promising. He points out that “... consciousness cannot be limited to the methods of sciences,” but if you are not a substance dualist I would argue that it is not immediately disqualified. The paradigm and discipline-specific methodologies we work from are quite important. The difficulty in studying consciousness has been that we have been too narrow in our conceptualization and investigation. To effectively research human consciousness, we must take an interdisciplinary approach to frame the nature of consciousness and utilize the relative strengths of each disciplines’ methodology. My position is not one of substance dualism, but more of a modified naturalism similar to Chalmers. If consciousness is included as a primitive to reality, then many of the problems that we face now may dissolve as easily as when the physicists began their work on electricity.

When dealing with the theological role of miracles in the Christian world view, I would agree that defining Nature is important for the questions of epistemology and ontology of consciousness. The scientific investigation of

human consciousness has a more limited metaphysical importance in Christian theology. Clearly Scripture teaches that we are created in God's image despite its relative silence on these other issues. If consciousness is a natural primitive, an embodied soul, or a ghost in the machine, then our moral place in the universe is still the same. We answer to the Lord Jesus. My concern is not that we will lose our morality, our uniqueness as humans, or our wonder at God's miraculous power, but that we have a clearer appreciation for how we have been created rather than a refusal to give up the "ghost."

## Note

<sup>1</sup>David Chalmers, *The Conscious Mind: In Search of a Fundamental Theory* (Cambridge, Oxford University Press, 1996).

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## Dissimilarity of Theory Testing in Historical and Hard Sciences: A Response to Keith Miller

Recently Keith Miller wrote an interesting article emphasizing similarities between historical sciences, such as geology, astronomy, and evolutionary biology, and "hard" sciences, such as chemistry and physics ("The Similarity of Theory Testing in the Historical and 'Hard' Sciences," *Perspectives on Science and Christian Faith* 54, no. 2 [June 2002]: 119–22). While one can overstate the difference between these two types of sciences, as Miller credibly argues, one can also underestimate that difference. Consideration of Ian Hacking's work on scientific realism suggests that a nontrivial difference between the two types of science exists. Reflection on the doctrine of providence, which has both ordinary and extraordinary aspects, emphasizes the distinction between the two types of sciences.

According to Miller, "[h]istorical sciences are just as predictive, and testable, as the 'hard' sciences" (p. 120). He also argues that the objects of study in the two sorts of sciences are comparable in their degrees of accessibility, because, for example, some physical processes are unobservable, whereas some astronomical processes are observable. Certainly there is some truth in this statement. Before conceding the point to Miller wholly, however, one should recall Ian Hacking's work on experimentation and scientific realism.<sup>1</sup> According to Hacking, when the powers of a theoretical entity (such as the electron once was) become understood well enough that one uses it to construct devices that manipulate other aspects of the physical world, then one must admit that the theoretical entity really exists, as indeed everyone does today in the case of electrons. (Quarks would be a suitable theoretical entity today.) But what can the historical sciences offer as analogs to the electron in this regard? One can hardly use and

manipulate the Cretaceous period, or, for that matter, a historical flood, to achieve some result today. Of course, Hacking's condition is intended to be sufficient, not necessary, for realism about the entity in question. Even so, the inapplicability of his condition to the historical sciences serves to remind us that their objects of study just are not as available to the scientist as are those of the "hard" sciences.

With this reminder in mind, let us recall a relevant aspect of an exemplary doctrine of providence, drawn from the traditional Presbyterian doctrinal standards: "God, in His ordinary providence, maketh use of means, yet is free to work without, above, and against them, at His pleasure."<sup>2</sup> It is clear that the "hard" sciences pertain to God's ordinary providence, so it would be theologically inappropriate to appeal to special providence to explain, say, the motion of a falling object. Historical sciences, on the other hand, involve both ordinary and special providences, assuming that God has acted in special ways in history. As Christians, we must admit that God has at least occasionally acted in special ways, or, in other words, performed miracles. But if miracles have occasionally occurred, and if historical sciences are aimed at truth (as Miller admits), then on what grounds should historical sciences—or at least those *prima facie* relevant to biblical stories—admit only law-uniform theories, and not also theories positing miracles? But the admission of miracles implies that theories about the past are underdetermined by the data existing today or in the future. How, then, does one choose among the infinity of empirically adequate theories in some historical science? Various criteria might be proposed, but presumably agreement with relevant genuine divine testimony, if any, is one of them. Such a criterion generally does not appear in the "hard" sciences. We are led, then, to see a rather important difference in theory testing between historical sciences and "hard" sciences, *pace* Miller.

## Notes

<sup>1</sup>I. Hacking, "Experimentation and Scientific Realism," in *Science and the Quest for Reality*, ed. A. I. Tauber, New York University, New York 1997; reprinted from *Scientific Realism*, ed. J. Leplin, University of California, Berkeley 1984.

<sup>2</sup>*The Westminster Confession of Faith*, ch. 5, section 3.

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