material contains intrinsic radiocarbon is not supported by the data.

Notes

[1]R. Rogland, "Residual Radiocarbon in an Old-Earth Scenario," *Perspectives on Science and Christian Faith* 59, no. 3 (2007): 226–8.

[2]J. Baumgardner et al., "Measurable ^{14}C in Fossilized Organic Materials: Confirming the Young-Earth Creation-Flood Model," in *Proceedings of the Fifth International Conference on Creationism,* ed. R. L. Ivey, Jr. (Pittsburgh, PA: Creation Science Fellowship, 2003), 127–42. www.globalflood.org/papers/2003ICCc14.html

[3]R. E. Taylor and J. Southon, "Use of Natural Diamonds to Monitor ^{14}C Instrument Backgrounds," *Nuclear Instruments and Methods B* 259 (2007): 282–7.

[4]See, for example, M. Arnold et al., "^{14}C Dating with the Gif-sur-Yvette Tandetron Accelerator: Status Report," *Nuclear Instruments and Methods B* 29 (1987): 120–3; K. van der Borg et al., "Precision and Mass Fractionation in ^{14}C Analysis with AMS," *Nuclear Instruments and Methods B* 123 (1997): 97–101.

[5]P. Grootes, "Carbon-14 Time Scale Extended: Comparison of Chronologies," *Science* 200 (1978): 11–15; and D. Lowe, "Problems With the Use of Coal as a Source of ^{14}C-Free Background Material," *Radiocarbon* 31 (1989): 117–20.

[6]Baumgardner et al., "Measurable ^{14}C in Fossilized Organic Materials."

[7]P. Zermeno et al., "Prevention and Removal of Elevated Radiocarbon Contamination in the LLNL/CAMS Natural Radiocarbon Sample Preparation Laboratory," *Nuclear Instruments and Methods B* 223-224 (2004): 293–7.

[8]Grootes, "Carbon-14 Time Scale Extended: Comparison of Chronologies."

[9]Taylor and Southon, "Use of Natural Diamonds to Monitor ^{14}C Instrument Backgrounds."

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Poe Exchange

Historically Inaccurate and Seriously Misleading Argument

"From Scientific Method to Methodological Naturalism: The Evolution of an Idea" (Harry L. Poe and Chelsea R. Mytyk, *PSCF* 59 [2007]: 213–8) presents a discussion of methodological naturalism as a very recent development in thought about science and scientific method. The discussion is framed primarily in philosophical terms, and the general tenor of the authors' argument is that "methodological naturalism" is an unnecessary *addition* to the general principles of scientific method and could just as well be dispensed with.

The authors' argument is *historically inaccurate* and seriously *misleading* in respect to essential issues in science. It also *rests on and supports* an extremely naive view of "scientific method," one that taken to its logical extreme would imply that all sorts of methods of inquiry and argument have an equally valid claim to be regarded as "science." Although the authors mention neither "intelligent design" in biology, nor "creation science" in relation to modern physical science, it is clear to any thoughtful reader that their argument tends to support the idea that such alternatives are (in principle) equally valid approaches to science. It is not clear how far the authors themselves might go in actually supporting these or other specific alternatives, but this only illustrates the deceptive and insidious effect of making philosophical arguments about science without reference either to the history of science or to the specific scientific questions entailed.

I make no particular issue out of defending "methodological naturalism" in the context of most contemporary debate about the term. However, the effort of Poe and Mytyk to present the idea as though it were a recent and unnecessary addition to "scientific method" is completely inaccurate historically. What we today call *physical science* has its origins in an approach to understanding the physical world championed by Robert Boyle, Isaac Newton, and their seventeenth-century contemporaries, which they called "*the mechanical philosophy*." Since these men (especially Boyle) held clear and explicit theological views about God's sovereignty and agency in creation, it is obvious their advocacy of *mechanical philosophy* was purely "methodological"—specifically, as an approach to physical science. In a long article published in *PSCF* (March 2002),[1] I presented an extended discussion of the theological context legitimizing such a naturalistic approach to science. Part of my purpose in doing so was to anchor this "naturalism" by affirming its continuity and coherence with the point of view taken by Boyle in relation to physical science. I cannot develop these arguments here, but I think for the sake of historical accuracy alone, Poe and Mytyk ought to have been aware of their force and connection with the scientific past.

The authors' argument is also seriously *misleading* in respect to the effectiveness and success of "naturalism" in the approach of physical science to explaining the physical world. Over more than three centuries, firm adherence to this "naturalism" as a basis for application of the scientific method to physical phenomena has spectacularly succeeded in understanding the physical world. Alternative approaches based on "non-naturalistic" assumptions have *never* done so. Since that is the case, it is specious and misleading to conduct a purely philosophical discussion (as Poe and Mytyk do) suggesting that "methodological naturalism" is really irrelevant to the success of physical science. As someone has said in relation to recent generic attacks on methodological naturalism by some Christian writers, *if it isn't broken, don't fix it!*

While Poe and Mytyk do not make this point clear, recent attacks on the legitimacy of "methodological naturalism" as a presupposition of science are almost entirely predicated by problems of the origin of complexity and information in the "genetic code" of biological organisms. This is obviously true in the cases of J. P. Moreland, William Dembski, Stephen C. Meyer and other advocates of "intelligent design" as an alternative to a purely mechanistic and reductionist Darwinian account of biological origins. Authors cited by Poe and Mytyk as "in favor of the concept" of methodological naturalism have not all endorsed the Darwinian approach without reservation, but their opposition to attacks on "methodological naturalism" by ID proponents represents their conviction, based on scientific experience and historical understanding, that such attacks are erosive of the scientific enterprise in the long run. For reasons I have developed at some length elsewhere, I share this general conviction,[2] but *without* also defending the reductionist scheme implicit in a Darwinian approach to biological origins.

Finally, I would stress that a "naturalism" adequate to a sound understanding of biological systems may require a wider scope than that provided by the mechanical philosophy of Boyle and Newton, which, though it was entirely appropriate to the limited concerns of *physical science*, was merely developed as a heuristic scheme for dealing with that specific subject. I would distinguish sharply between the general notion of *naturalism* as a methodological approach to scientific enterprise, and the specific model or paradigm of "nature" adequate to a particular part of that enterprise. It is an interesting fact that even Robert Boyle thought that the scope of the "mechanical philosophy" would prove inadequate to a full understanding of biological organisms. As a number of astute persons have pointed out (and I have discussed in some detail elsewhere[3]), the logical organization of biosystems clearly embodies some limited notion of *achievement* or *function*, a concept entirely absent from the mechanistic paradigm of the "mechanical philosophy" or *physical* science.

Notes

[1]Walter R. Thorson, "Legitimacy and Scope of 'Naturalism' in Science. I. Theological Basis for a 'Naturalistic' Science," *PSCF* 54, no. 1 (2002): 2–11.

[2]Walter R. Thorson, "Telos in Biology: Steering Between Aristotle and Darwin," *CRUX* 34, no. 2 (2003): 23–33 [*CRUX* is a quarterly published by Regent College, Vancouver, BC]; Walter R. Thorson, "Naturalism and Design in Biology: Is *Intelligent Dialogue* Possible?" *PSCF* 56, no. 1 (2004): 26–37.

[3]Walter R. Thorson, "Legitimacy and Scope of 'Naturalism' in Science. II. Scope for New Scientific Paradigms," *PSCF* 54, no. 1 (2002): 12–21. See also further discussion of this idea in note 2 above.

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Critiquing the Uncritical

Poe and Mytik, "From Scientific Method to Methodological Naturalism: The Evolution of an Idea," *PSCF* 59, no. 3 (2007): 213–8, present a number of popular but erroneous notions. The first is that "science is only qualified to describe what we can learn through sensory observation" (p. 214). Were this true, any effort to understand social or personal phenomena by surveys must be nonscientific. Even granting that questionnaires involve subjective responses which must be handled statistically, excluding the study of persons and their institutions from science seems arbitrary and futile. The studies are empirical, as objective as possible given the entities studied. If they are not scientific, in what category do we put clinical psychology, sociology, cultural anthropology and related studies?

The authors give only one of two applicable definitions of "nature" from the *Oxford English Dictionary* (the same in both editions), the one given under IV 11 a (215). Another, IV 13 a, is clearly less metaphysical, but sufficient for science:

> The material world, or its collective objects and phenomena, esp. those with which man is most directly in contact; freq. the features and products of the earth itself, as contrasted with those of human civilization.

The quotations supporting the originally cited definition go back to the fourteenth century, well before the Enlightenment, which supposedly gave the current metaphysical twist to the term. Seventeenth and eighteenth century attitudes were not operative that early. The quotations for the later definition begin with 1662.

The gravest error is surely "A chance event has no cause" (p. 216), which is nonsense. The only reason I can think of for writing something this ridiculous is our tendency to think of a precipitating cause as *the* cause, as in "Flipping this switch causes that light to go on." Random occurrences do not have precipitating causes. However, any honest recognition of the causal situation must include more: e.g., that the bulb is not burnt out and is screwed in tightly, that the fuse is not blown or the breaker not tripped, that there is no blackout, and so on, extending to the physical principles involved in the generator and turbine. A reasonable understanding of a chance event merely recognizes that we do not know the causes, for they are properly multiple. Of course, there are those with a metaphysical ax to grind who specify chance to end the investigation and to specify that no further cause may be given.

Consider, for example, the declaration that the Big Bang was only a chance variation in the quantum vacuum. The intent is to end the inquiry, especially to exclude the Creator. But there are immediate questions: Where did the quantum vacuum come from? How did what we detect

only in the evanescent production of minute entities produce such immense mass-energy? That the cutoff is unsatisfactory is evident in the promotion of the multiverse, which only pushes the need for a first cause back. But a creator or first cause is never a scientific notion.

Adding that methodological naturalism tends to make naturalism "the proper metaphysical explanation" (p. 217) essentially denies the relevance of modifiers. The metaphysical naturalism they describe is not the methodological naturalism or empiricism of scientific investigations. Usually, only those with a dogmatic agenda, such as atheists or adherents to Intelligent Design, equate the two. However, methodological naturalism claims only that the scientific endeavor seeks natural causes for the phenomena investigated. It is equally open to atheism, deism, dualism, idealism, monism, panentheism, pantheism, theism, etc.—but it excludes miracles as scientific explanations.

It is unfortunate that neither authors nor reviewers analyzed matters more deeply and carefully. However, the description of the origin of "methodological naturalism" is useful, even though it may be little more than a new label for Francis Bacon's exclusion of final causes in empirical investigations.

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Poe Replies

Walter R. Thorson and David Siemens, Jr. have raised several objections to the article on methodological naturalism written by me and Chelsea Mytyk which appeared in the September 2007 issue (pp. 213–8). I would like to respond to their objections.

Thorson states that our article is "historically inaccurate" because methodological naturalism has been part of science since the seventeenth century. While we agree that "naturalism" has been a philosophical position adopted by many scientists since the seventeenth century, "methodological naturalism" is an idea first introduced in the 1980s by Paul de Vries, at that time a professor of philosophy at Wheaton College. We believe that Dr. de Vries deserves credit for developing this creative idea that proposes the blending of philosophy and methodology, though we think it is a bad idea. Science is rooted in methodological objectivity, not methodological naturalism.

Thorson bases his argument on what he construes from what Boyle, Newton, and their ilk believed to conclude that they practiced methodological naturalism. The argument involves several leaps based on what is "obvious" to a modern mind. That a scientist may be committed to naturalism we allow, but we do not conclude that the scientific method only works if a scientist is committed to naturalism. A scientist may believe in the resurrection of Jesus Christ without it affecting a chemistry experiment. A scientist may believe that God became incarnate in flesh without it affecting DNA research. A scientist may believe that God communicates with people and hears prayer without it affecting the development of the LASAR. The success of Boyle and Newton was not based on their philosophy but on the objectivity and accuracy of their observations and analysis of those observations.

Thorson pulls out one of the most effective rhetorical devices available by suggesting that if we disagree with "methodological naturalism" then we must believe in Intelligent Design and Creation Science. I have addressed both of these issues in print in *Science and Faith*, *Designer Universe*, *What God Knows*, and *Dance or Chance*. I have discussed why the Creation Science position is a misinterpretation of Scripture. I have argued that Intelligent Design is a very good apologetic argument, but that it is not science. What Thorson fails to understand is that methodological naturalism is not science for the same reason that Intelligent Design and Creation Science are not science.

Thorson seems to wed opposition to methodological naturalism with the Intelligent Design movement. This issue has nothing to do with Darwin or Dembski and the current controversy that swirls around them. This issue concerns how scientists are taught to think of their discipline. I suspect that what really concerns Thorson is the difference between efficient cause and final cause. Science is concerned with efficient cause and cannot work if people want to put the hand of God into a scientific explanation. But it works both ways. Methodological naturalism assumes that God is not a *final* cause. It does no good to argue that I believe God is the Creator and Sustainer of the universe, except when I do an experiment. Science cannot make statements about final causes; therefore it should remain silent on the issue. By invoking methodological naturalism, a person is saying that God plays no part in the universe at all.

Siemens seems to suggest that reading social science survey data does not involve sensory observation. I am afraid I do not follow him. As to a difference between the hard sciences and the soft sciences, I think most people in physics, chemistry, and biology recognize the difference between the natural sciences and the social sciences. The social sciences do not have the same predictive power of the natural sciences. We may say something is "scientific" in that it borrows from the methodology of the natural sciences, but the social sciences have enormous problems that the physical sciences do not face. In this sense, the social sciences are in their infancy, but I think this whole line of discussion is beside the point.

Siemens correctly notes that the meaning of the word "nature" has been changing. That is our point. The discussion that follows the early definition of nature describes how the word has changed in its usage over five hundred years and that we are in the midst of a re-sacralization of nature.

Siemens employs a masterful strategy of lifting a sentence out of context ("A chance event has no cause."). In the paragraph in which the sentence is found, the meaning is made clear and the causes of "random events" explored. It is possible that Siemens honestly did not follow the argument at this point, and if that is the case, I apologize for being unclear.

Siemens joins Thorson in arguing that people who oppose methodological naturalism are adherents to Intelligent Design or atheism. Siemens appears to be emotionally embroiled in a debate with the Intelligent Design people, but not every discussion is about Intelligent Design. We have not argued to include God in the exploration of efficient causes. We have argued that no philosophical agenda should be brought into the exploration of efficient causes. God and naturalism are final causes. We do not argue for methodological theism. We argue for what Bacon argued for against the Aristotelians of his day: clear the deck of philosophical presuppositions about how the world works.

Christians at work in the scientific community have been embarrassed by the claims and declarations of those involved in Creation Science. Attempts to make God a scientifically explanatory efficient cause and to date the universe at a mere 6,000 years old make the Christian faith look ridiculous and place a huge stumbling block to the gospel. The sins of Creation Science, however, do not justify excluding God as the final cause of all things. Though well intended, the term "methodological naturalism" is misleading to young scientists and unhelpful to the progress of scientific knowledge. It also assumes the position of the Deists: God has no involvement in the universe of cause and effect. Christians would do well to realize that we have more options than the extremes of Creation Science and Naturalism.

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A Call for Book Reviewers

The readers of *PSCF* have long appreciated the many insightful reviews published within its covers. Reviews have been assigned to whoever requested a particular book first. Out of fairness to ASA members with different post delivery times and to assure the best fit between reviewer and book, *PSCF* is planning to **initiate book reviews by invitation**. If you would be open to being asked to contribute to this interesting and important service of writing a book review, please send a brief email to **psfranklin@gmail.com** that describes your areas of interest and expertise, preferred mailing address, and phone number. This information will be entered into a database that will bring you to the book review editors' attention when a book of interest to you and *PSCF* readers becomes available for review. Of course, when a book is offered to you by email or phone for review, you would still be able to accept or decline the mailing of the book at that time.

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