



Are the Standards of Evidence Realistic?

Meanings of Naturalism

I am neither a theologian nor a philosopher so I shall restrict my comments to several portions of Thorson's papers rather than the text as a whole. I believe that he has considered carefully many aspects of the topic of naturalism and has made a number of constructive proposals. As a biochemist/molecular biologist, the term naturalism had no particular significance to me throughout most of my forty-year research and teaching career. No particular naturalistic assumptions were necessary for that research, which had to meet current standards for valid biochemical research.

In my later writings on the origin and development of organisms, I have used the following definition: "A naturalistic view of evolution is one guided entirely by chance events."¹ In contrast, my great uncle, Vernon Bailey, spent many years with the U.S. Biological Survey crisscrossing the country studying birds and small mammals. He entitled his biography, *The Making of a Naturalist* and I am certain his view of naturalism would have corresponded more nearly to the "limited" view of Thorson.

Thorson emphasizes in his first paper the significance of "what science means as a limited discourse about the world" (p. 3). He notes that this view of the limited meaning of naturalism was that of Boyle. He properly emphasizes that his own view of "naturalism" is radically different from the naturalism assumed in the "scientific world view." I would like to go a step further and point out how the presently accepted world view has refused to accept any limitations in its application to the origin and development of organisms. When one refuses to accept the possibility of divine agency being involved, one is left with the view that all life has been produced entirely by chance events. This has led to new standards being used for what constitutes scientific evidence.

We find Richard Dawkins proposing that a "ration of luck," i.e., events with probabilities of 10^{-20} , were perfectly acceptable in scientific explanations of protein formation by chance events. Gerald Joyce and Leslie Orgel, in discussing RNA formation by chance as a component of their RNA World Hypothesis, refer to this synthesis as a Molecular Biologist's Dream, indicating their recognition of the impossibility of their proposals. As one who spent my research career carrying out biochemical research involving enzymes, metabolic pathways, analytical techniques, etc., I was expected to have data that met accepted standards of statistical analysis. Origin of life scenarios by chance alone always include many steps that are thermodynamically impossible or that utilize precursors that are unreasonable. The usual explanation for considering these is the claim that if millions of years are available, anything is possible. They neglect to note that degradative reactions would also be occurring over these millions of years, so increasing the time available has no synthetic advantage.² In their chapters on the origin of life and evolution, high school biology texts provide particular examples of this departure from good scientific evidence. This issue has been dealt with in more detail in a previous paper.³

Naturalism and Divine Agency

Thorson proposes "naturalism" as an enterprise whose aim is to offer understanding and explanation of created things in the (limited) context of cultivating and keeping them. This would be acceptable to me, if those who now reject its limited use accepted it. In discussing naturalism, Thorson also says: "It is

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Dialogue: Response

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not an attempt to understand, to explain or name God, or to detect God's agency in nature" (p. 9 and p. 11, note 21). He notes, correctly, the Old Testament emphasis of awe in regard to the divine name, and the Jewish use of the four letters (JHWH) to avoid expressing the name of Jehovah. I believe, however, his extension of this theme to exclude searching for God's agency in biology to be incorrect. When we choose to provide explanations for scientific findings in biology, a possibility of divine agency should not be excluded.

Logic of Function

Thorson makes a major point in his discussion of the logic of function, that the meaning for biology of DNA/RNA is "explained" by analogy with the role of code in a digital computer (p. 15). I suppose one's background makes considerable difference in how one "explains" something like this. As one who taught graduate courses for many years dealing with the chemistry and metabolism of nucleic acids and their components, I do not need an analogy to explain DNA/RNA. The real explanation lies in the chemistry of purines and pyrimidines, ribose and deoxyribose, etc., and the types of reactions they undergo in forming the polynucleotides that we refer to as DNA and RNA. Analogies always present a picture that is less than the whole truth, and this is certainly true in this case. Thorson continues by saying "everyone knows that the digital computer, the entity whose analogous functional performance makes DNA/RNA intelligible to us as biologically significant ..." (p. 15). I would much prefer that Thorson would have talked about topics such as codons of DNA, exons, introns, information transfer, the different types of RNA and their roles, etc., and made his points from a molecular biology standpoint, rather than from the standpoint of a digital computer. However, when he applies his logic of function to the irreducibly complex structures described by Michael Behe, his reasoning becomes much clearer to me.

Complexity and Function

In discussing the importance of function, as well as complexity, Thorson touches on an important point (pp. 16–17). I wonder, however, if this emphasis is as new as he implies. Having taught biochemistry to medical and graduate students for forty years, I have always emphasized the con-

cept of function for the metabolic pathways of biochemistry. As an example, I have often gone beyond "function" to "purpose" when discussing the Krebs tricarboxylic acid cycle and the connected respiratory chain. I have noted their significance in the production of stored energy as adenosine triphosphate (ATP). The ATP is then used to drive a variety of essential reactions. Most graduate-level biochemistry textbooks are organized on the basis of function, particularly in their metabolic sections.

In summary, I have touched upon what I consider the major error of the current world view of naturalism: their unrealistic standards of evidence. I have disagreed with Thorson's rejection of "divine agency" as an appropriate topic for consideration. I have questioned his use of a digital computer as an analogy, and I have discussed "function" and "purpose" in the teaching of biochemistry. ◇

Notes

- 1 G. C. Mills, "A Theory of Theistic Evolution as an Alternative to the Naturalistic Theory," *PSCF* 47 (1995): 112–22.
- 2 Challenges to the "scientific world view" of evolution were presented initially by C. B. Thaxton, W. L. Bradley and R. L. Olsen in *The Mystery of Life's Origin* (Dallas, TX: Lewis and Stanley, 1984); additional objections are provided in G. C. Mills, *PSCF*, see note 1; and G. C. Mills, *Christian Scholar's Review* XXIV (1995): 449–58.
- 3 G. C. Mills, M. Lancaster, and W. L. Bradley, "Origin of Life and Evolution in Biology Textbooks—A Critique," *American Biology Teacher* 55 (1993): 78–83.