

Berry keeps the interest of his readers by highlighting the contributions of great scientists and thinkers over the centuries, with many vivid quotations. However, the book lacks a sense of urgency. For example, it alludes to the problem of human population growth only indirectly, as an aspect of deep ecology or in the Earth Charter. Berry makes no suggestions of actions individuals can take to lessen the marring and improve the maintenance of nature. This book is more valuable for information on the history of ecological and evolutionary thought, and for the author's view of how science and Christian faith are integrated, than as a call to Christians for better stewardship of the environment.

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Biblical Longevities: Reply to Huebner

Donald A. Huebner, "Biblical Longevities: Some Questions and Issues" (*PSCF* 63, no. 4 [2011]: 287-8) has published a five-point critique of my article on biblical longevities, "Biblical Longevities: Empirical Data or Fabricated Numbers?" (*PSCF* 63, no. 2 [2011]: 117-30): two of his points are mistaken, and the other three do not relate to the content of the article but are based on what the article did *not* contain.

First, Huebner states that Table 1 is a "... listing of all generations from Adam to Manasseh." This is incorrect: Table 1 lists *longevities* (as the label states) not *generations*. The second paragraph of Huebner's critique is devoted to an argument that the table is not a satisfactory list of all generations; I agree with Huebner on this point because that is not what the table is intended or represented to be.

In his next paragraph, Huebner states, "The author ignores the clear lack of expected randomness in many of the entries of Table 1." This also is mistaken: the article addresses randomness, expected or otherwise, in the sections on the error distribution, statistical independence, Benford's law, rounding, and the systematic properties expressed by the equation for longevity. The rest of his paragraph consists of a discussion of various probabilities, but these points lack specifics (only one numerical probability is specified, and that one is incorrect), lack support by computations or other evidence, and lack awareness of the problems associated with post hoc probabilities. His use of an equation that yields longevities as though it yielded dates of birth, shows a misunderstanding of the points he intends to criticize.

Huebner objects that I failed to explain why some of the numbers are rounded and others are not, and that I did not cite evidence of the rounding of ages in the first millennium BCE. I acknowledge that I do not know why some were rounded and others were not, but I do argue that such is the case; and I also argue that the evidence of rounding contained in the article is sufficient.

Huebner would like to know how the longevities reported in other sources, such as the Septuagint, the Samaritan Pentateuch, and Josephus, affect my conclusions. Although I agree that it would be interesting to subject other sources to the analysis applied here, the outcome of such an analysis cannot affect my conclusions: if the results are the same, the conclusions, of course, are the same; if the results differ, it shows how the Masoretic sources differ from these other sources. Note, parenthetically, that I chose the Masoretic-based sources owing to the extreme measures the Masoretes used to promote accuracy (H. S. Miller, *General Biblical Introduction: From God to Us* 2, rev. ed. [New York: Houghton, 1960], 183-4).

Finally, Huebner objects that I did not address "... how the earliest genealogical numbers were accurately transmitted." However, I do not say that the numbers were accurately transmitted. My analysis simply provides evidence against fabrication as one particular source of inaccuracy. Errors may have arisen from many other sources, as Huebner points out. A particularly likely source of error that he does not mention may have arisen in the translation of numbers from hexadecimal to decimal notation, as pointed out by Philip Metzger (personal communication).

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Engineer and Scientist

The paper "Engineering Is Not Science" by Steven H. VanderLeest (*PSCF* 64, no.1 [2012]: 20-30) deserves comment that illuminates the role of "engineering" within ASA.

History yields some interesting anecdotes on the shifting boundary between science and engineering and associated terminology. In World War II, many scientists (mostly physicists) were recruited to help develop radar (an engineering function) at "radiation labs" at MIT and Harvard that helped win World War II.¹ After the war, these scientists went back to their scientific pursuits.

At Harvard at that time, there was a small engineering department, but in the post-war period there was a great expansion, focusing on the boundary between engineering and science somewhat in response to a large bequest from Gordon McKay in support of "applied science." Flexibility of language was illustrated by the breadth of departments claiming to be part of "applied science" including "social relations." Since then the new department was renamed eight times, including Department of Engineering Sciences and Applied Physics, Division of Engineering and Applied Sciences, and currently, School of Engineering and Applied Sciences (2008).

In my own career, I have played various roles including "engineer" and "scientist." I was in the Raytheon Research Division that applied "scientist" jargon to job titles, but in 1971 I made an important invention (engineering) after a colleague and I did some science on the subject (which would not have been permitted in an operating division). For the next 16 years, I was involved in

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extensive patent litigation (with many tests, depositions, affidavits, etc.) that ultimately yielded to Raytheon/Amana ~\$31 M in royalties. Was I an engineer or scientist in that effort?

In 1968, I was assigned to help Amana deal with the safety of microwave ovens regarding potential microwave radiation effects. This was extended to defense of other technology, including radar and VDTs (video display tubes). I was searching for the truth about the effects of electromagnetic energy and I believe I was a scientist in that work. It prompted the paper "Is the ASA Seeking the Truth in Environmental Matters?" which was presented at the 1986 ASA annual meeting.

I was concerned about the "environmentalist" bias within the ASA and the lack of sentiment that matched my thoughts, for example, in thanking God for modern sanitary engineering that obviated the need for the daily wagon that picked up human waste in nineteenth-century England—or thanking God for automobiles which freed us from the routine of picking our way among horse manure on streets, and above all, as the grateful recipient of two cataract operations in the last five years, thanking God for modern medical technology that transformed what used to be (sixty years ago) major surgery with a hospital stay into a two-hour appointment, less traumatic than a visit to the dentist.

In the 1990s, Don Munro, executive director of ASA, asked me to chair an Industrial Commission (IC) to welcome more members to ASA and also to present within ASA views of industry on controversial matters. I have occasionally commented on anti-industry bias in ASA publications (e.g., my letter in *PSCF* 54, no. 4 (2002): 285–6), but it has become clear to me that the tension is not between "engineering" and "science" but between environmentalism and pro-technology. Hence, when the IC was replaced by a new ASA affiliation, I successfully lobbied for the name Christian Engineers and Scientists in Technology (CEST) for members who are engineers or scientists involved in the development of technology and who find the results compatible with a Christian worldview. CEST continues today with Bill Yoder as president. He issues periodically an informative newsletter to CEST members. It is unfortunate that only one CEST member placed an article with the technology issue and that CEST was not mentioned directly.

Note

¹Robert Buder, *The Invention That Changed the World: How a Small Group of Radar Pioneers Won the Second World War and Launched a Technological Revolution* (New York: Simon & Schuster, 1996).

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