

BIBLICAL CREATION AND SCIENCE: A REVIEW ARTICLE

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An Israeli physics professor who is an elected fellow of the American Physical Society, Nathan Aviezer, has brought into focus the possibilities of a budding relationship between science (accessible to Biblical students) and the historical reliability of the descriptive creation narratives in his recent book, *In the Beginning: Biblical Creation and Science*.¹ Working from his theological background as an observant Jew and Torah student, Aviezer has done a considerable amount of work in disciplines other than his own in an effort to determine whether there is consistency between the findings of contemporary science and the literal interpretation (assisted by Torah scholars) of creative events described in Genesis. More than one creative event—not just a high-energy cosmic fireball but creative action (as contrasted with passive inaction) at various later times—is contemplated and diagnosed here.

The book carries an introduction by C. Domb, formerly Clerck Maxwell Professor of Theoretical Physics at the University of London King's College. Domb gives the distinct impression that he, like a very small number of other physicists, realizes that new scientific discoveries have implications for the possible existence of God and for possible activities of that invisible God. He clearly recognizes that Aviezer brings modern scientific knowledge (in the fields of cosmology, astronomy, geology, meteorology, paleontology, anthropology and archeology) to bear in an understandable manner upon the hermeneutical task with respect to phrases whose meaning is obscure.

The six days of creation refer to six specific phases in the development of the universe. Phases, not twenty-four-hour days, is the perspective here, following a number of rabbinical commentators (no Christian OT scholars and no Jewish Torah scholars who lived after 1880) and sages of the talmudic era. Aviezer is obviously indebted to Rabbi E. Munk's etymological study of Genesis 1 and the interaction therein with traditional Jewish commentators.² Since geological, paleontological and astronomical evidence for an old universe did not accrue until the middle of the nineteenth century, Aviezer may have decided to look at interpretive output before that time where thinking could not be influenced by later science. But to imply that scientific or other knowledge has no role in Biblical hermeneutics would indeed be wrongheaded, and Aviezer's position is diametrically opposed to

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¹ Hoboken: KTAV, 1990, xii + 138 pp., n.p.

² E. Munk, *The Seven Days of the Beginning* (Jerusalem: Feldheim, 1978) *passim*.

such a notion: Science can be both an ally and an important tool for understanding Genesis. In addition to these Torah and Talmud scholars, however, one could probably add Irenaeus, Origen, Basil, Augustine and Aquinas as among those who did not affix twenty-four-hour days but thought in terms of phases. One would not of course expect unanimity on this point, and some exploratory citations for a twenty-four-hour day may be of historical interest, as one study shows.³

Contemporary Christians whose ministry interfaces with the public and with any sector of the scientific community (and with university students in general) have, over time, garnered a number of Biblical and theological arguments for phases in addition to the talmudic one that it is difficult to speak of a “day” or of “evening and morning” in the usual sense if neither the sun nor moon is in the sky. These arguments, supportive of and consistent with the measured age of the recently created universe in which we find ourselves (15 billion earth years or so is a relatively short time in galactic terms), are helpfully set out by Christian astrophysicist H. Ross.⁴

In any case, the interpretation of the day as a linguistic metaphor for an unprescribed period of time or phase is surely in contextual coincidence with the entire narrative and in keeping with what the text would have meant in the mind of the author of Genesis (as far as we are able to discover it) as he attempts to describe monumental events in simple straightforward language that he and his thoughtful readers in the ancient world would best understand and appreciate. The perspective of a twenty-four-hour day is not a Biblical fact but an interpretation that seems inconsistently forced upon the writer’s train of thought. Aviezer, then, is on solid hermeneutical ground here, and as a result of this he is able to interact with modern science in a critical and productive manner.

Assuming that the text is truthful and eternally valid, Aviezer’s methodology is to posit that there is a scientific explanation or description that is consistent with the text (although by the nature of the case any ongoing,

³ J. Lewis, “The Days of Creation: An Historical Survey of Interpretation,” *JETS* 32 (1989) 433–445. Tentative interpretations of early Church leaders are also treated objectively by H. Ross, *Creation and Time: A Biblical and Scientific Perspective on the Creation-Date Controversy* (Colorado Springs: NavPress, 1994) 16–24.

⁴ *Ibid.* 45–72. Scientific arguments for phases that are cogent and contextually consistent are provided by Aviezer throughout his book, so that it is completely unnecessary (and sensorially artificial) to engage in a calculational ploy: positing that during the creation activities God had a velocity that was relativistically high (with respect to the speed of light) in a place of reference relative to a stationary earth, thus generating a very tiny time period as perceived by an earth-bound writer so as to relativistically contract fifteen billion years down to this very tiny time period, only then to artificially divide it into six equal parts and call them “days,” as suggested by G. Schroeder, *Genesis and the Big Bang: The Discovery of Harmony Between Modern Science and the Bible* (New York: Bantam, 1990). Despite being uncritically touted by one American televangelist-politician, Schroeder’s imaginative ploy contradicts the Genesis author’s statement that God’s place of reference was over the surface of the water (Gen 1:2)—i.e., the place of reference for God is from the earth in the ensuing description of events, not from some highly relativistic place of reference. Also, since the calculation itself cannot be done so as to result in six equal divisions of time, only in one very tiny time of 144 hours (144 divided by 6 is 24), Schroeder runs unproductively adrift with respect to the scientific age of the earth, the earth being cited early in the narrative.

experimentally- and discovery-oriented set of disciplines may not be able to adequately illuminate the text at this or any other time).

The six creative phases are as follows: the origin of the universe; the formation of the solar system; the appearance of dry land and the plants; the seasons, the days, and the years; a fifth day addressed in three parts (evolution, the origin of life, the animal kingdom); and a sixth day addressed in two parts (the uniqueness of man, man as the pinnacle of creation).

Concerning Gen 1:1–5, evidence is adduced to support the instantaneous creation of matter and to show that the universe had a beginning as the text claims. A beginning opens up the scientific possibility of a Beginner, a possibility of reasonable inference that cannot be summarily dismissed. Einstein, whose equations suggested that the universe had a beginning, originally opposed this result on theological grounds but later reversed his opinion and admitted the necessity for both a beginning and a superior being. As far as Einstein scholars know, however, he never believed in a personal God. Regrettably Einstein did not live to see recent discoveries that are not only very suggestive of God's existence but perhaps also suggest a God with serious interest in material creation. Although Einstein discovered God, he apparently was unable to go much beyond Gen 1:1. But his influence was substantial, both morally and theologically. Aviezer is surely aware of this background and is therefore understandably keen to stress at the outset of his arguments that all the experimental results support a beginning, which is "in striking agreement with the simple words that appear in the opening passages of the book of Genesis."⁵ Here theological students may profitably consult a sensitive summary of Einstein's dilemma (and his courageous testimony concerning God's existence)⁶ as well as the seminal popularization of agnostic astronomer R. Jastrow, whose heuristic quote will always be apropos: "For the scientist who has lived by faith in the power of reason, the story ends like a bad dream. He has scaled the mountains of ignorance; he is about to conquer the highest peak; as he pulls himself over the final rock, he is greeted by a band of theologians who have been sitting there for centuries."⁷

Concerning Gen 1:6–8, planetary formation required special conditions, not the least of which was vast quantities of ice now seen in comets. Concerning Gen 1:9–13, we must take careful note of the Permian period and of the surface water on Venus, Earth and Mars. Developing climatology capable of sustaining human life was assisted by a propitious earth-sun distance. Concerning Gen 1:14–19, a descriptive theory of ice ages and the gravitational role of the moon could fix the length of the day and influence earth's weather.

Concerning Gen 1:20–25, the creation of the animal kingdom on the fifth and sixth days, the text asserts a distinct act of creation for every species of animal, in contrast to Darwinian theory. The idea that more complex

⁵ Aviezer, *In the Beginning* 17.

⁶ H. Ross, *The Creator and the Cosmos: How the Greatest Scientific Discoveries of the Century Reveal God* (Colorado Springs: NavPress, 1993) 43–49.

⁷ R. Jastrow, *God and the Astronomers* (New York: Norton, 1978) 116.

species evolved from more simple ones is inconsistent with the text and, from the scientific evidence marshaled, might be only a tenuous idea at best. As I am sure Aviezer has learned, here is an especially contentious area when interfacing with the biological establishment. Professional background for evolutionary biologists assumes Darwinian conclusions without the necessary experimental evidence that is required for theoretical justification and acceptance in other sciences, like physics, chemistry or astronomy, for example. Aviezer is to be commended for his handling of the issues, and it is to be hoped that a few research-oriented biologists will take up his points and begin to write introductory textbooks, properly separating fact from legitimate speculation and legitimate lack of knowledge. This would take the professional courage of Einstein.

Aviezer argues that the verbs “create” (1:21) and “make” (1:25) could denote different processes, thus accommodating some evolution within species that is observable. But he duly notes that the explanation of large-scale changes leading from one class of animals to another is a major challenge for evolutionary doctrine.⁸ For example, the discovery of a hominid specimen (*Nature* 327 [1987] 205–209) disagrees with the standard theory.⁹ There is more work to be done on Gen 1:20–25, but Aviezer’s three chapters will repay careful study. The origin of life is indeed a scientific paradox, and DNA components do not of themselves suggest gradual evolution between species. Aviezer demonstrates a reasonable scientific consistency (but one in its infancy) with this portion of the text, which in turn implies that the underpinnings of the standard evolutionary model are in need of reexamination, particularly with respect to the handling of data and reluctance to eliminate unsubstantiated presuppositions.

The sixth day, Gen 1:24–31, with its emphasis on the uniqueness of man is taken to refer to modern man, who in the family of “manlike” species is the only living species whose fossil record is inconsistent with gradual evolution. Ross also sees the advent of modern man (the first spirit-creature) in a special context among hominids and cites emerging anthropological evidence consistent with the abrupt appearance of modern man.¹⁰ Aviezer argues that the categories of the paleolithic age, Neanderthal man, modern man and the agricultural revolution all encompass a distinct historical moment (with a creative act implied): the appearance of modern man. This event is marked by a “dramatic surge of cultural advances . . . followed by a long period of gradual technological and artistic development. . . . This relatively recent revolution can be associated with the biblical statement that God blessed man, telling him to ‘fill the land and subdue it’ (1:28).”¹¹

The sixth day, Gen 1:27–29, with its emphasis on man’s position in creation as being in the image of God is treated with an anthropological note.

⁸ Aviezer, *In the Beginning* 61 n. 3.

⁹ *Ibid.* 62 n. 39.

¹⁰ H. Ross, *The Fingerprint of God: Recent Scientific Discoveries Reveal the Unmistakable Identity of the Creator* (2d ed.; Orange: Promise, 1991) 159–160.

¹¹ Aviezer, *In the Beginning* 101.

Man has the ability to communicate with his fellows, has intellectual curiosity and possesses a conscience. Man alone has the ability to make moral decisions, a privilege and a responsibility. These traits inform the idea of a divine image. Concerning Gen 4:1–2, 19–23, the early history of man, Aviezer provides information on agriculture, animal husbandry, metalworking and musical instruments. Useful appendices and indices complement the volume.

The author has set out a plausible pattern wherein broad scientific knowledge can impact upon our understanding of the Genesis narrative with respect to creative acts like Gen 1:1, 21 and 27. An ancient text, then, unfolds in literal meaning so as to demonstrate consistency with a reasonable assessment of modern scientific knowledge supported by experimental findings.¹² This result will be both amazing to the open-minded unbeliever and fruitful for the believer. Of course not all questions are answered, but no pertinent questions seem to be deliberately avoided. A harmony begins to emerge between Biblical interpretation and good science that theological students can have confidence in as new developments unfold. Aviezer has taken a profitable first small step in an area that has needed integration and unification. His work has popular appeal. He views questions as an incentive to further study and the absence of questions as a cause for concern—a traditional scientific attitude that is drilled into introductory physics students as they are challenged repeatedly to ask “How do we know?” and “Why do we believe?” He modestly attributes the source of his mindset to a Jewish sage: “He who hesitates to ask questions does not learn.”¹³

¹² I stress that Aviezer is always concerned with experimental results. He does not take theoretical speculation to be scientific fact until it is confirmed by experiment that can be duplicated and that measures known quantities. This is sound methodology. Take, for example, the theoretical work of one famous theoretical physicist-cosmologist, S. Hawking, who believes the universe had a beginning in real time with a hot, big-bang singularity. He believes this today because the experimental evidence is irrefutable. His theoretical work, however, leads him to an idea of “imaginary time, at right angles to real time, in which the universe has no beginning or end” (*Black Holes and Baby Universes and Other Essays* [New York: Bantam, 1993] 172). Only he knows how much intellectual weight can be given to the idea of imaginary time. But whatever that weight may be, unconfirmed by any experiment or consensus, he apparently feels that for him there is no need for God to serve as a Beginner of material creation in real time. The big-bang singularity can occur, given its intersection with his imaginary time. Perhaps he feels comfortable in giving his idea this much weight over against the implications of recent discoveries. But his ideas here are not scientific results and they have no widespread acceptance, nor do they need to have. While they spring from legitimate enterprise and are interesting, they are theoretically speculative and are not scientific facts. They are perhaps in the realm of possibility, not probability. They have no experimental validity. They do not carry the significant weight of experimental findings. On the other hand, the consistency of which Aviezer speaks is, in my judgment, real. His point in this example is solid: In the case of an origin, a beginning, there was one in the only time science knows anything about. And this is consistent with and highly suggestive of the reliability of the claim that “in the beginning God created the heaven and the earth” (much more so, to me, than of the reliability of imaginary time).

¹³ *m. Ṭabot* 2:5.