

ultimately entail rejection of any supernatural creation regardless of when or in what form.

Scientific estimates of age are based on the backward projection of natural changes whose rates are known. Consider that a gray-headed person is observed to have a somewhat wrinkled face and a hesitant gait. One might guess the person's age to be perhaps eighty years. We do this by knowing something about the rate of the aging process and judge that it would require about eighty years for a normal person to reach this condition. Similarly, knowing the rate for formation of tree rings, we project backward to estimate the age of a tree. Knowing the C14 content of an object and the rate of decay to C12 we can estimate the age of certain organic artifacts. The assumption underlying this procedure is that an unbroken chain of natural events lies back of whatever entities we observe.

In the case of a supernaturally created entity, there is not an unbroken line of natural events leading to its present state. Applying otherwise valid scientific methods, the determination of age will inevitably lead to a false conclusion. Thus when Jesus turned water into wine, the guests considered it the best wine served at the party. They made the natural assumption that the usual series of fermentation events had taken place, a process requiring time. However, Jesus had performed a supernatural act, which bypassed the usual sequence of events and produced good wine within the hour. Without the testimony of witnesses about what had been done, the guests would have been "deceived."

If the heavens and earth were ever created at any time or in any stage, there is no way in which scientific methods could arrive at the conclusion that they came into existence by a supernatural act outside the scope of science. The scientist will always assume that a series of natural events produced whatever entity is being evaluated for its age. Therefore unless the concept of supernatural creation is abandoned there will inevitably be the "appearance of age" for whatever was created. If the act of creation is pushed back to the "Big Bang" the scientific approach will assume there were as yet unknown precursors. Modern science is unwilling to assume a creative act that is forever beyond understanding.

Given the inevitability of a conflict between scientific estimates of age and the "true" age of created entities, it is improper to accuse God of lying since the problem lies in the inherent limitation of scientific methods applied to supernatural events. God has told us that he is the Creator of all things. Jesus was not a deceiver when the wedding guests believed they were enjoying normally aged wine since the witnesses could testify about what happened. I do not know the solution to the problem, but to reject apparent age out of hand is to leave the door open to the abandonment of the concept of supernatural creation.

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Mature Creation

One way of trying to reconcile Genesis and modern science employs the idea that when God created the universe

it had the appearance of age (trees had rings, pebbles were smooth, stars shone, and so forth).¹ In his recent paper on young-earth creation, Dick Fischer criticizes this idea on the ground that it makes God dishonest.² Many others have taken the same view.³ This criticism, however, presupposes that God would have made a young universe without the appearance of age.

Let us suppose that the universe is a completely determined dynamical system, such that its state at noon GMT tomorrow can, in principle, be predicted from its state at noon today. Then its state (as represented by the positions of its elementary components) can be expressed as a continuous function of time, $f(t)$, where $t = 0$ is the time of creation. Now since f is a continuous function, states can be calculated from f for $t < 0$. Thus, when, at $t = 0$, the system is created, it inevitably appears to have had a previous history. Not even God can create it without it having this appearance. The only exception is if f has a singularity at $t = 0$, as on the big bang model.

A simple example is a pendulum. When a pendulum is made and set in motion, it immediately appears to have been in motion before this. There is nothing its maker can do to prevent this, short of attaching a label stating the time at which he or she set the pendulum going.

If the universe is not a completely determined system (as Bohr understood the quantum theory to imply, but Einstein resisted), the picture is more complicated. A system can now have more than one possible history. Consider, for example, a uranium mineral in a rock. This can have an infinite number of possible histories, depending on which atoms have disintegrated, and when. For many systems, however, there still can be only one macroscopic history. This is the case for a uranium mineral. This has a history in which atoms, collectively, have disintegrated at a constant rate. The universe at $t = 0$, therefore, will appear to have an infinite number of quantum histories, but a smaller number of macroscopic ones.

Here I have interpreted the quantum theory pragmatically. There are other, more radical interpretations. According to one, even recent history is only apparent.⁴

That a mature creation does not make God dishonest was argued by the late Donald M. MacKay in reply to Charles Kingsley. He wrote:

... whatever the peculiarities of Gosse's view, the point apparently missed by Kingsley is that some kind of inferable past is inevitably implicit in any ongoing system, whether with fossils or without, so that to speak of falsehood here is to suggest a non-existent option ... If the creator in the Genesis narrative were supposed to make the rocks without fossils, this would not have helped, for nothing could have prevented the rocks from having some physically inferable past; their past simply would have been different and moreover inconsistent with the rest of the created natural history. On Kingsley's argument, pressed to its logical conclusion, God ought not to have created any matter at all, since even molecules cannot help having some inferable past history.⁵

MacKay himself went further than Gosse and suggested that creation is the bringing into being of the *whole* of our space-time: past, present, and future.

Other arguments against the idea of a mature creation are: (1) that one could equally well say that the universe was created last Thursday⁶; and (2) since the idea cannot be tested, it is useless.⁷ The answer to (1) is that God has told us when he created the universe. The answer to (2) is that the usual scientific assumption, that the universe has been in existence for as long as it appears to have been so, is equally untestable.

To incorporate the idea of a mature creation into the interpretation of Genesis, allowance has to be made for the Fall. The design of the universe after the Fall was different from its design before the Fall (Gen. 3:14–19). Any apparent age of the universe relates to its *post*-Fall design (just as the apparent history of the wine Jesus made from water relates to the wine not the water). I discuss this fully in my book *Big Bang, Small Voice*.⁸ I also consider other ways of reconciling Genesis and modern science.

Notes

¹This idea goes back to François-Auguste Chateaubriand, *Génie du Christianisme* (Paris: Migneret, 1802), part 1, book 4, chap. 5; Granville Penn, *A Comparative Estimate of the Mineral and Mosaic Geologies* (London: Ogle, Duncan and Co., 1822); Philip Henry Gosse, *Omphalos: An Attempt to Untie the Geological Knot* (1857; reprint, Woodbridge, CT: Ox Bow Press, 1998).

²Dick Fischer, "Young-Earth Creationism: A Literal Mistake," *Perspectives on Science and Christian Faith* 55 (2003): 222–31.

³See John W. Burgeson's review of *Omphalos, Perspectives on Science and Christian Faith* 53 (2001): 127–8.

⁴See J. S. Bell, *Speakable and Unsayable in Quantum Mechanics* (Cambridge: Cambridge University Press, 1987), paper 15. Interestingly, Bell cites Chateaubriand and Gosse.

⁵See John W. Burgeson, "Notes on *Omphalos*," www.burgy.50megs.com/gosse.htm

⁶See John W. Burgeson's review of *Omphalos, Perspectives on Science and Christian Faith* 53 (2001): 127–8.

⁷S. J. Gould, *The Flamingo's Smile* (London: Penguin, 1985), 110–1.

⁸P. G. Nelson, *Big Bang, Small Voice: Reconciling Genesis to Modern Science* (Latheronwheel, Caithness, Scotland: Whittles, 2003), chaps. 9–10. I can supply copies of this on request.

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Ultimate Proof or Ultimate Flood? Response to Paul Seely

Paul Seely gave an excellent summary of the GISP2 Greenland ice core and its relevance to theories of Noah's flood (*PSCF* 55, no. 4 [Dec. 2003]: 252–60). However, there are at least two reasons why Seely should not claim an "ultimate proof" against a global flood. First, if one demands a fully natural event, the possibility of a floating ice sheet has not been eliminated. Second, in regards to theology, Noah's flood remains a candidate for hand-of-God, interventionist-style, miraculous action. The universe is magnificently "robust" in "formational economy," but this natural endowment cannot claim all our conceptions—not if we believe that God raised Jesus Christ from the dead.

Apparently, no large, but otherwise ordinary, flood has occurred over Greenland in the past hundred thousand years or so. This finding is significant and challenging to

global flood theory. However, our present knowledge cannot encompass the concept of an *exceptional and singular* flood. Science can only hope to: (1) demonstrate that a global flood *did* occur—thus far, a fruitless, but informative and fun, adventure; (2) *tentatively* show by negation that a global flood could not occur "naturally"; (3) eventually support the idea of a regional flood fulfilling the requirements of the story; or (4) demonstrate that the story is probably fictitious. Seely is simply out of bounds in attempting to prove that a (possibly miraculous) global flood is beyond the power of our Creator. This is like proving that virgins cannot give birth to saviors.

Aside from the miraculous possibilities, the case against a natural flood is incomplete. Consider a remarkably unique (or amazingly coincidental, or fantastically robust) set of events that must nonetheless seamlessly mesh with ordinary earthly reality. For starters, there is the still-open question of a possible origin (and subsequent disappearance) of enough water for a global flood. Seely seems to focus on rain, and he seems to presume that Gen. 7:4, 12 requires extraordinary precipitation over all flooded regions. But this is not the case; the text only requires a forty-day rainy period (of unspecified severity) in the ark's region. More importantly, an ordered priority is given to "the fountains of the deep" (Gen. 7:11). The Quran goes further by referring to water that "gushed forth from the Oven" (11:40 and 23:27) and by specifying that the earth was subsequently commanded to "swallow up your waters" (11:44). Both Genesis and the Quran seem to point to water from beneath the lithosphere. Until science can constrain the earth with the presently unknown boundaries of plate tectonic dynamics, internal water cannot be eliminated as a possible source (and outsource).

Given the absence of a significant melt layer within the glacier, it seems Seely is correct in eliminating the possibility of flooded ice. This means we are left with the singular possibility of the Greenland ice sheet floating in the floodwaters. But, since the ice sheet may or may not have *come from Greenland*, we actually have two possibilities. If the ice sheet is foreign in origin, this would (backwardly) fulfill Seely's requirement that an ice sheet must "float away" due to ocean currents. If the ice is indigenous, it must be sitting (crudely or exactly?) where it used to be. This later case, in turn, presents two possibilities: either the ice sheet floated in a topological "circle" or the ice sheet "hovered" above the continent. Each of these possibilities moves further toward the exceptional, but none are presently proven to be "unnatural." If the ice sheet floated freely and then landed in position over Greenland, this outrageous detail merely requires one more "edge of the coin" toss to be added to the Creator's impressively long list.

Seely describes the ice sheet as being "exactly" in position. However, his assumption of rigidity appears excessive. He has not produced evidence that would adequately constrain the plastic behavior of a glacier or characterize a long-term stasis at the interface of ice and continent. Instead, Seely has acknowledged that "the ice below 2,850 meters may be disturbed."

With regard to the ice core's lack of a "marine" character at its (possibly disturbed) underside, Seely has not secured his extrapolation of ice shelf characterization into the realm of glaciers suspended for a few months in water of unknown composition and temperature and then