

Creationism Should not be in School

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Once again we are treated to a lengthy replay of John Baumgardner's battered and tattered creationist arguments. Once again we are treated to the spectacle of an employee of a national laboratory making assertions that astronomy, biology, geology, and physics have it all wrong: that the universe was actually created something like 10,000 years ago, in accordance with the literal interpretation of a book written over 2,000 years ago. A book which has been shown by over two centuries of serious scholarship and painstaking analysis to be replete with serious inconsistencies and contradictions at all levels. A book whose geocentrism and anthropocentrism (not to mention abundant superstitions) in a universe of human-scale spatial and temporal dimensions fit perfectly with the cultural milieu of its provenance. These things are known beyond reasonable doubt, as can be readily verified by spending a little time at the library. Such things are also acknowledged and accepted by all of the mainline (non-Fundamentalist) seminaries and schools of theology in the nation. That such facts are not well known among the general population is yet another shortcoming of our educational system.

This belief in a universe around 10,000 years old obviously requires that geological processes be speeded up by factors varying from a thousand to a million. It is the root of Baumgardner's unrelenting espousal of geological catastrophism on such a scale as to create the Grand Canyon in weeks and continental separation in years. These are desperate proposals by an intellectually desperate man in his attempt to fit the worldview -- flat earth, heaven just above, and all distances traversed by foot or by boat--of two millennia ago into the scientific worldview. Such belief, particularly in someone exposed to a university education, that a book--any book--written so long ago could possibly give us a factual scientific picture of the world borders on derangement.

In support of his contention that the scientific worldview is totally wrong, Baumgardner makes half a dozen creationist assertions which have been refuted many times by many people over the years. One wag has put it well: "Creationist 'facts' are like ducks in a shooting gallery--they're easy enough to shoot down, but no matter how many times you do it, they pop right back up

again." It seems that the favorite creationist tactic is just to ignore rebuttals and criticisms, and then later-taking advantage of the limited memory spans of busy people-act as if nothing happened and replay the tape again. However, in this case, he cleverly also takes advantage of the usually unimpressive educational levels on most of the school boards in this state.

In early 1995, over a span of a couple of months, the Monitor published a series of five very lengthy creationist Letters by John Baumgardner. Many of his statements were extreme and some were ad hominem. Two examples follow: "Myth is too generous a term for an idea that properly should be labeled intellectual fraud. I predict at some time in the not too distant future it (evolution) will be regarded as one of the most outrageous hoaxes ever perpetrated on the human race."... "So Mr. Mark here is not writing to scientists but rather engaged in deceiving nonscientists."

In response to these five Letters, Graham Mark and I wrote separate Guest Columns (March 16 and April 28, 1995) carefully demolishing Baumgardner's claim to have a scientific case for teaching creationism in the schools. Now he trots out the same_ arguments again, with slightly modified wording. It is not feasible to rerun those Guest Columns again in rebuttal, so, the interested reader is encouraged to obtain copies from the Monitor office.

I have no intention of here rehashing my former specific rebuttals, but do feel compelled to say a bit more about a couple of the points which Baumgardner makes such a big deal of-again, and again, and again. The first is his contention that the existence of a genetic code can only be explained supernaturally and, indeed, provides "... one of the most difficult to refute evidences for God's reality the human race has ever faced." Such assertions play well to a Board of Education, but not to an epistemologically grounded scientist or to a philosopher. [Compare, for example, how poorly the famous Argument from Design has fared in the last two centuries.] I took some care to rebut his argument in my previous Guest Column. Here, I will just say it is based on a series of non sequiturs springing from wishful thinking. His claim that a coded set of instructions, even 'though composed of molecules arranged in space, is non-material is dubious in that matter and space-time are inextricably linked at a deep level. But, even so, such alleged non-materiality in no way implies the existence of a supernatural entity any more than, say, Newton's Laws do. However, the real resolution of this issue depends on a requisite general understanding of the relation of science to the (putative) supernatural. [I will have more to say about this shortly.] In general, creationists fail to grasp the truly revolutionary consequences of the deceptively simple idea of natural selection acting on random mutations. This

has been well explained, but it takes books, not paragraphs. NeoDarwinian selection, basically a kind of ratchet mechanism for saving the successes while discarding the failures, represents a giant step in human understanding that, while based on the laws of physics and chemistry, goes far beyond them in its ability to create what has never existed before.

The second point he brings up again and again relates to the age of the earth. His attempts at inferring a Biblical age from the amount of salt in the sea or the amount of organic material remaining in dinosaur bones are simply ridiculous to anyone who knows anything about the essential requirements for something to be a reliable clock.

Overall, the creationist strategy is to try to find weaknesses in inferences made from individual observations and then to point to reasonable doubts. Such a tactic, as in parallel courtroom situations, usually plays well with those who are ignorant of the overarching Big Picture. This has been compared to picking at a few individual threads of a large and beautifully coherent tapestry and pointing out how weak some of them are. The fact is that a fabric can be quite strong even when some of the threads are weak. What the creationists conveniently overlook are the converging lines of corroborating evidence from different techniques and different scientific disciplines. For example, the current (radiometric) age of the earth (4.5 billion years) is beautifully corroborated by independent lines of evidence from astronomy, geology, and physics. It is the laws of physics which give us the most accurate (radiometric) dating method as well as age estimates from astronomical data. Another example is the beautiful manner in which the fossil record is corroborated, interpolated across gaps, and (in a few cases) extrapolated by the DNA-sequencing data. No creationist ever mentions this while avidly pointing out (real or imagined) gaps in the fossil record. Briefly put, the beauty and the predictive power of the modern scientific Big Picture stem from the coherent interweaving of independent lines of evidence, many of which are still incomplete at this time.

Finally, I would like to discuss the creationism vs. science issue in more general terms, focusing on science vs. the supernatural, which is the pivotal issue of the whole controversy. I'm of course keenly aware that this is a hot potato which is prudently handled very gingerly, if at all. Most sensible people simply refuse to touch it in public. Nonetheless, we have all witnessed the unreasonable potency of creationist arguments in influencing the decisions of school boards, both statewide and nationwide. In large measure, the fate of the educational standards for the next generation-not to mention our future

competitiveness in the global marketplace-is in the hands of the nation's school boards. Therefore, I believe it's time to face this crucial issue head-on.

Before getting to that crucial issue, I'd like to cite an example of the "unreasonable potency" just mentioned. I believe a case could be made (how strong I don't know since I don't have many of the relevant facts) that Baumgardner, through his long letter to the State Board of Education, had more influence on their recent decision (not to mention evolution, while discussing "alternative theories", in the new educational standards for the state) than did any other person. This letter was reprinted in full in the Monitor of Aug. 23.

It happens that the wording (as reported in the Alb. Journal of Aug. 23) of the new State standards approved by the Board on Aug. 22 follows Baumgardner's suggestions and style (particularly his last paragraph) very closely. In any event, what they put forth was what Baumgardner was asking for Coincidence?

Okay, getting back to that crucial issue of science vs. the supernatural, I should define the terms of course. Since the definition of the latter is either rather trivial or, nearly impossible, depending on viewpoint, I'll not bother with it. [By the way, it should be noted that, in the discussion to follow, it won't matter whether or not the supernatural actually exists, so that issue will not be raised here.] I'll define "science" by the consensus attitudes and practices of its practitioners during the four centuries of its existence.

The basic character of what was called "natural philosophy" until nearly the middle of the nineteenth century and is today called "science" developed in major part in opposition to the supernaturalism that had dominated human thought for at least as long as thoughts have been recorded. The problem with supernaturalism as an explanatory method is not that it cannot do the job-for absolutely anything and everything can always be rationalized supernaturally-the problem is it's so easy that an unlimited number of explanations can be given for any particular occurrence or phenomenon, and there is no way to determine which is right or which is wrong. So their usefulness in the everyday world is largely limited to making people feel good. The realm of the supernatural, being by definition unconstrained by empirical reality checks, is bounded only by the limits of the human imagination-broad limits indeed. One example from the huge number available from human history will suffice: Of the several hundred extinct and extant cultures known, virtually all developed a creation story to explain their origins. While some of these stories share vague similarities, they are all different, so at most one could literally be true;

but there's no reality check to determine truth or falsity. The second core problem with supernatural explanations is that they do not lead to the kind of understanding of the natural world that is technologically useful in prediction and control.

Early on, animistic explanations—all things that move or grow, and many large things that don't, are inhabited by spirits or souls—predominated, and apparently constituted the basic world view of the known cultures. Later, by 9,000 to 7,000 years ago, this manifold of spirits had begun the long process of condensing into a far smaller number of more anthropomorphic ones not always tied to particular animals or objects. Most people most of the time, whether ancient or contemporary, have always explained occurrences and phenomena over which they have little or no control in terms of the actions of supernatural agents. Hence, viewed broadly over all historical time and space, the world views and explanatory modes have been supernaturalistic, though of course varying in particulars from one locus to another. Then, less than half a millennium ago, into what might be thought of as a vast sea of supernaturalism, an island of thoroughly rational naturalism began slowly upthrusting. Such an island—enduring, prevailing, and growing apace—was unique to all of human history. This island was unique because of its two defining characteristics: rigid exclusion of supernatural (miraculous) explanations and its development of an unprecedentedly powerful naturalistic mode of explanation based on the synergy of the theoretical with the empirical, while remaining solidly rooted in the latter.

Given its history and its nature, it's clear that science (a modern form of rational naturalism) cannot allow even one supernatural explanation of natural phenomena—it would then have to be called something entirely different (Natural Theology?). Far worse yet, supernatural explanations—which are usually inherently untestable, for reason is impotent in the context of miracles—are supremely easy to concoct, and thus would multiply like viruses and quickly kill science. Most simply expressed: Science and the supernatural cannot coexist in the same explanatory framework—the historically older will devour the younger.

The above brief outline is sufficient to show why creationist explanations can never and will never be accepted as scientific, as well as why so-called "Creation Science" will always remain a contradiction in terms. It can never be presented as an "alternative theory" in any science classroom which professes to be teaching science. Incorporation of any supernatural hypothesis or theory into the scientific framework will destroy science for reasons given above. This issue is really that simple.

Another basic issue in the creationism vs. evolution battles, which should really be discussed at length but cannot be here, is that the public in general (and school boards in particular) do not understand the special way the word "theory" is used in science. This semantic matter lies at the heart of important issues surrounding teaching the "theory of evolution." For most people outside of science, "theory" is virtually a synonym for conjecture or speculation. As with the now-factual Theory of Special Relativity, for instance, substantial portions of evolutionary theory have by now become factual. However, much (at an ever more refined level), is still subject to the skeptical wrangling that makes science work.

Finally, and in summation, my key question for John Baumgardner is this: What could you possibly replace biological evolution with that would still remain scientific? Because science, both in origin and in function, is necessarily naturalistic to the core and because any overall alternative to evolution has to be supernaturalistic, the answer is evident.