

Appendix 1

An evolving controversy; Dispute over teaching about the origins of life is likely to flare again this week

By Lauri Lebo
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The debate over teaching creationism in science class has quieted down since the Dover Area School Board approved its high school biology textbook last month.

But some Dover Area School Board members say they expect to revisit the issue at their next meeting, when William Buckingham will propose introducing to the district the controversial book "Of Pandas and People: The Central Question of Biological Origins."

Buckingham says the book should be taught as a companion text to the approved biology book, and he thinks he will have the support at the Tuesday meeting to get the book into the classroom.

"I feel good about it," he said. "I think we have a chance."

It's a case biologists across the country say they are familiar with and one that is similar to what is happening in other states.

The book teaches the concept of "intelligent design"—the idea that all life was created by a divine being—and supporters of teaching creationism say it's about fairness, giving equal time to competing theories.

But to others, it's an attempt to introduce religion through the back door.

"It's not science," said John Staver, director of science education at Kansas State University.

The concept of intelligent design requires faith, he said, which contradicts the critical thought demanded in science.

Fair and balanced

While Buckingham considers the Bible's Book of Genesis to be life's blueprint, he says the issue of intelligent design is a pragmatic compromise between his beliefs and what the law will allow.

Intelligent design does not necessarily contradict many of the arguments in favor of evolution—such as the ideas of natural selection and adaptation, or the scientific belief that the Earth is as much as 4.5 billion years old.

But intelligent design goes beyond science—evolutionary theory may explain how we got here, but it doesn't answer why.

"Pandas" seeks to answer that question by arguing that natural selection and changes to the gene pool could not have happened randomly.

But the problem is that intelligent design, like creationism, violates the scientific method, said Karl Kleiner, a biology professor at York College. No experiment can prove or disprove God's existence.

“Intelligent design still relies on an event that is not replicable,” Kleiner said. Scientists test their theories by trying to prove them false, and advocates of intelligent design are unable to do that, he said.

“They can’t say, ‘Well, maybe a divine being didn’t create it.’”

Flagella and giraffes

“Pandas” uses the giraffe’s long neck to illustrate the argument for intelligent design.

The book argues the giraffe’s long neck depends on a series of integrated adaptations that could not have happened separately, so they must have been present from the beginning of the species’ existence.

A giraffe’s circulatory system includes a coordinated system of blood pressure controls. The book says pressure sensors along the neck’s arteries monitor the blood pressure and activate contraction of the artery walls.

“The complex circulatory system of the giraffe must appear at the same time as its long neck or the animal will not survive,” authors Percival Davis and Dean Kenyon write.

Similarly, Michael J. Behe, a biochemistry professor at Lehigh University, coined the term “irreducible complexity”—the idea that in order for many organisms to have evolved at the cellular level, multiple systems would have had to arise simultaneously. In many cases, he argues, this is a mathematical impossibility.

Behe uses the bacterial flagellum as an example, arguing that for the propeller-like appendage to move, between 30 and 40 protein parts are needed. Removal of any one of those parts causes the system to cease functioning—just as a mousetrap depends on all its pieces to operate.

Darwinism’s theory of intermediate and incremental evolutionary steps can’t explain this, Behe said. “It’s one big step,” he said.

But Kleiner says other scientists have found that the flagellum parts aren’t as unique as Behe states and intelligent design proponents are missing a key point—that for every evolutionary step, there were countless genetic mutations that provided no useful advantage to the organism and died out.

Kleiner said supporters often use the eye to argue for intelligent design, saying that surely no singular organism was born with a genetic mutation that bestowed eyesight.

Misrepresenting Darwinism?

But Kleiner said such an argument misrepresents Darwinism.

“It didn’t happen overnight,” he said.

Instead, a group of cells might have been light-sensitive, permitting an organism to sense shadows, perhaps an advantage in escaping predators. Such a trait would permit the organism to survive long enough to produce offspring who in turn inherited the genetic mutation.

Over time, incremental changes occurred, each one providing an evolutionary advantage until full eyesight evolved.

The same theory applies to the giraffe’s long neck, Kleiner said.

“This is the process by which we have diversity on Earth,” he said. “If it’s not a useful trait, then it will be eliminated from the gene pool.”

Additionally, design advocates misrepresent evolution, scientists say, when they maintain that mainstream biology rules out the handiwork of a divine creator.

“Evolution doesn’t deny the existence of a God. It just doesn’t require one,” Kleiner said.

Mainstream biologists and paleontologists continue to debate the fossil evidence for the origins of life, and just as there is room for debate within evolutionary theory, there is disagreement within intelligent design. While Behe, a Christian and author of “Darwin’s Black Box,” believes in a common ancestry—the idea that all life, including humans, descended from a common ancestor—other ID proponents disagree and say that a divine being created each individual lifeform with a unique plan.

Professor John Staver has followed the Dover battle from his office at Kansas State University.

National battlegrounds

Since his previous appointment as co-chairman of the 1999 committee to revise science requirements for Kansas schools, Staver has been at the forefront of the battle between evolution and creationism.

Five years ago, the Kansas Board of Education voted to downplay evolution in the state’s science standards—which, for many of the state’s biologists, became something of a national embarrassment.

After the November 2000 elections, the state board’s political makeup changed and the board approved standards stating evolution is a concept unifying all scientific disciplines. But the state Board of Education is expected to be taken over by pro-creationists after the fall election, and Staver said he expects he will be revisiting the issue in 2005.

Ohio has become another battleground, Staver said. After intense lobbying by intelligent-design proponents, the state school board there recently completed curriculum standards, including the writing of model lesson plans, one of which incorporates intelligent design.

Efforts in Pennsylvania to introduce creationism to a statewide curriculum have so far been unsuccessful, but the wording of the state Department of Education’s policy leaves the question of teaching creationism open to debate.

The state’s official statement on creationism doesn’t say it can’t be taught in the public schools, and officials are vague on how the subject can be handled.

“Whether it is constitutional to teach creation in the public schools depends on the context in which the instruction occurs,” the statement says.

“It is clearly permissible to teach creation as part of a course regarding theories of evolution, which course is part of the school district’s curriculum. . . . What occurs or what is proposed in the course must be viewed on an individual basis.”

Kleiner expresses the concern that intelligent design could potentially curtail critical thinking and quash scientific curiosity.

“What were the factors that made the giraffe tall?” Kleiner asked. “It doesn’t matter. God did it. “Clearly if your response is to say evolution doesn’t happen, then, basically, not to think in evolutionary terms is not to think at all,” he said, quoting scientist and Nobel laureate Peter Medawar.

Behe, on the other hand, argues that not permitting intelligent design in science class inhibits critical thinking by preventing alternative views.

“Science is still pretty clueless about how life started,” he said. “This is what kinda galls me, that students are being misled to believe that science knows more than it does.”

Faith versus science

In the world of science, there is little controversy about creationism, Staver said.

“It’s not established science,” he said. “Scientists have a lot of weird ideas, but in order to pass muster they have to go through the social community process, let your colleagues examine it, crawl back to your lab, figure out if your criticisms are good.”

But the ID proponents have been trying to cut in line, Staver said. “ID folks are appealing to a public that we know has a relatively low level of scientific literacy.

“They won’t say it, but they want to recast the paradigm of science to include God within it,” Staver said. Even though he is a staunch proponent of evolution, Staver doesn’t dispute the existence of God.

“I accept evolution as a scientific idea and as a fact based on the evidence,” he said. “My belief in God is based on my faith.

“It’s bad logic to conclude that God doesn’t exist when you never considered him in doing the work.” But it’s equally bad logic to conclude scientists reject God because a divine creator isn’t a necessary part of scientific theory.

If Buckingham is successful, the Dover school district will be the only one in York County teaching intelligent design. Officials from other districts say teachers are prepared to discuss creationism if the issue is raised by students, but nowhere is it part of the curriculum.

But Dover Area School Board member Noel Wenrich says whether Buckingham will get support from the rest of the board depends on what he proposes.

Like Buckingham, Wenrich supports making “Pandas” available to students searching for other answers.

But he doesn’t support the actual teaching of the textbook in class unless it’s needed to balance the other books, such as Charles Darwin’s “Origin of Species.”

Wenrich characterizes the two arguments as “intelligent design” and “the primordial soup.”

And in the end, he said, faith plays a role in all our decisions, even in science. “You can call it faith, or you can call it exploring other opportunities,” he said.

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