

EVOLUTION

Authors Scramble to Make Textbooks Conform to Texas Science Standards

The Texas market is so large that publishers must pay heed to new guidelines on what students should learn

Kenneth Miller, a Brown University biologist and author of a popular high school textbook, has spent years battling advocates of intelligent design (ID) and their argument that students need to be taught the “strengths and weaknesses” of evolution. So it was more than a little embarrassing when defense lawyers for the Dover, Pennsylvania, school board, on trial in 2005 for its policy to accommodate ID in biology classes, asked Miller, a prosecution witness, why he had used the same phrase in the 2004 edition of his textbook.

He had done so, Miller explained, so that his textbook could be used in classrooms throughout Texas, the second largest market in the United States. (Texas standards also shape what’s sold nationally, as publishers often use the same version in other states.) The “weaknesses” were nothing more than unresolved questions about evolution, Miller insists. “We wanted to show, without compromising scientific integrity, that we had met the literal standard requiring strengths and weaknesses,” he says.

In March, the Texas school board approved new science standards that omit the “strengths and weaknesses” line (*Science*, 3 April, p. 25). But many scientists view the new version as more insidious than the previous one. Among other things, it requires that students have the chance to “analyze and evaluate scientific explanations concerning the complexity of the cell.” The language is seen as an opening for ID proponents to argue that such “irreducible complexity” points to an external organizing force.

Those standards pose a new challenge for Miller and other textbook authors as

the board prepares for a new round of textbook adoption in 2011. Eugenie Scott of the National Center for Science Education in Oakland, California sees Miller’s earlier revision as a failed “attempt to be clever.” And she’s worried that history might repeat itself.

“When you put ‘weaknesses’ and ‘evolution’ in the same line, you reinforce doubts that creationists are trying to sow,” says Scott, whose organization monitors the issue as it plays out in state and local districts. In fact, Scott was so incensed by the revelation at the Dover trial that she confronted Miller after he testified. “What

requiring explanations of “sudden appearance, stasis, and sequential nature of groups in the fossil record”—although written with the intent to undermine evolution—as “an invitation to introduce students to punctuated equilibrium.”

Steve Nowicki, a biologist at Duke University in Durham, North Carolina, plans to take the same approach when he asks Texas to adopt his biology book, published by Holt McDougal. “I understand that there may be a political agenda behind the standards, but I am taking them at face value,” he says. “If a state thinks students need more information to understand evolution, I am happy to provide that.”

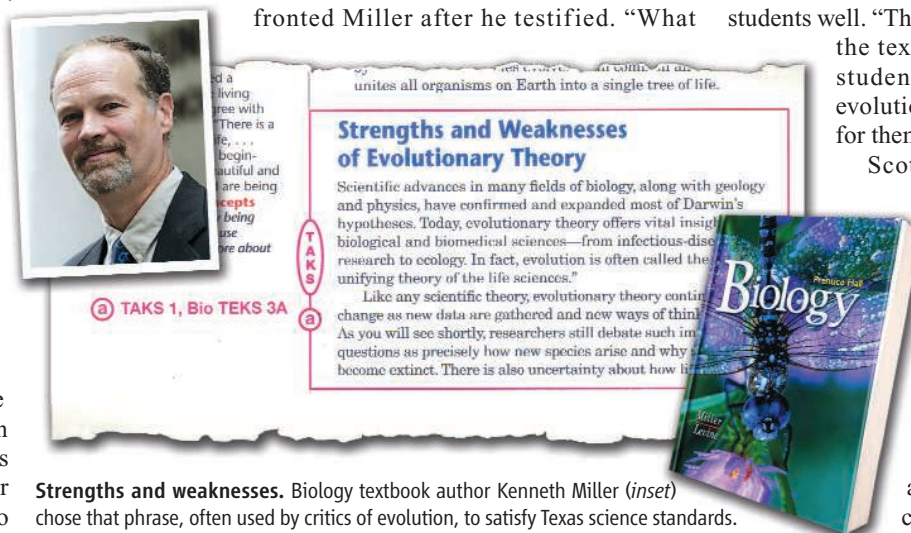
Don McLeroy had wanted the standards to require textbooks and other materials to offer an even more skeptical view of evolution. But McLeroy, whom the state legislature declined to reappoint as chair last month although he remains on the board, says he’s satisfied that requiring “more scientific evolutionary discussions” will serve students well. “The explanations offered [in the texts] will be so weak that students who are skeptical of evolution will see the weakness for themselves,” he says.

Scott believes that Miller’s approach is a “wonderful way to beef up content” while sticking to the letter of the standards. But she’s worried that McLeroy and others on the board who embrace ID may view phrases such as “complexity of the cell” as a victory, even if only cosmetic. “Sowing confusion is their goal,” she

says. How far they will push on the actual content will depend on the composition of the publicly elected board in 2011, she says. “I’m just hoping publishers don’t get weak-kneed and give in.”

Alton Biggs, a co-author of a popular biology textbook published by Glencoe, concedes that that may have happened in 2003, when 12 lines about “divine creation” were included in a section of his book that describes various “beliefs and hypotheses” for the origin of life. But those words were dropped in the next edition. He says his team expects that the version to be submitted for adoption will “meet the Texas standards as well as benchmarks and other standards set by scientific societies.”

—YUDHIJIT BHATTACHARJEE



Strengths and weaknesses. Biology textbook author Kenneth Miller (*inset*) chose that phrase, often used by critics of evolution, to satisfy Texas science standards.

were you thinking?” she asked him.

Miller’s answer, then and now, is not to get too excited. The new Texas standards leave plenty of room for authors to explain the robustness of evolutionary theory, he says, and that’s precisely what he and his publisher, Prentice Hall, plan to do. “The advocates of these standards underestimate the strength of the scientific evidence for structures and phenomena that they mistakenly believe evolution cannot account for,” Miller says. “The new wording is an opportunity to make biology texts even stronger.”

For example, Miller intends to “introduce more material on the evolution of organelles” within the cell to show that the cell’s complexity is in fact explained by evolution. Likewise, he sees the standard