THE EDUCATIONAL Forum

A Contemporary Controversy in American Education: Including Intelligent Design in the Science Curriculum

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Abstract

The battle between creationists and evolutionists has waxed and waned in American culture and education for decades. This conflict is evident in the contemporary debate between the proponents of intelligent design and its opponents. This article illuminates the intelligent design movement by describing major proponents' beliefs, goals, and tactics, and explores the controversy over a high school science textbook and the 2002 debate over Ohio's academic content standards in science.

Intelligent design is the belief that the origin and complexities of life can be attributed only to the action of a supernatural intelligence, and that the origin of life cannot be ascribed to natural causes or material mechanisms, such as those described by evolutionary science. In recent years, both proponents and opponents of intelligent design have become increasingly vocal in light of ongoing debates by school districts regarding the inclusion of intelligent design in their science curriculums. Though this article does not fully present and analyze the intelligent-design phenomenon, the author does describe the beliefs of intelligent design proponents and opponents, recounts the controversy surrounding a widely used high school textbook, and relates one state's journey toward including intelligent design in their science academic content standards.

What Is Intelligent Design?

Intelligent design has emerged as the most recent challenger to evolution. Proponents of this theory say that there are gaps in Darwin's theory—gaps that are best filled by recognizing the role of an intelligent agent in life's origin and development. According to Dembski and Ruse (2004, 3), "The claim is simply that there must be something more than ordinary natural causes or material

mechanisms, and moreover, that something must be intelligent and capable of bringing about organisms." This definition of intelligent design is predicated on the writings of Behe (1996), who argued that some biological structures are so irreducibly complex that their existence cannot possibly be explained by the evolutionary biology of Darwin.

In an editorial opinion published in *The New York Times*, Behe (2005) stated that "design should not be overlooked" as a cause for irreducibly complex systems and that intelligent design is the most obvious explanation for the origin of these systems. He also asserted that "the theory of intelligent design is not a religiously based idea" and that "intelligent design itself says nothing about the religious concept of a creator." He added that intelligent design is an elegant theory that is overwhelmingly and sensibly embraced by the public.

> *The contemporary argument for intelligent design is based on physical evidence and a straightforward application of logic. We can often recognize the effects of design in nature. For example, unintelligent physical forces like plate tectonics and erosion are sufficient to account for the origin of the Rocky Mountains. Yet they are not enough to explain Mount Rushmore.*

Behe invoked the popularity of this idea as justification for its truthfulness. Because opinion polls (Newport 2004) demonstrated that 45 percent of the American public believed in creationism and one-third were biblical literalists, Behe (2005) questioned the motivation of scientists who continue to promote the "messiness of evolution" as an explanation for life's complexities.

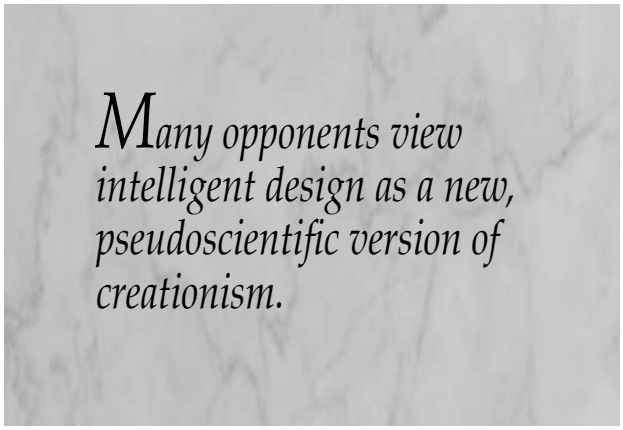
Opponents of intelligent design, the majority of scientists, and most scientific organizations, do not appreciate the logic of Behe's proposition. Many opponents view intelligent design as a new, pseudoscientific version of creationism, formulated in reaction to the Supreme Court's ruling in *Edwards v. Aguillard*, 482 U.S. 578 (1987). In this case, the court reviewed a Louisiana law requiring equal time for the teaching of creationism and evolution in school curricula. The court ruled that creationism failed to meet the legal criteria for science and clearly represented a religious belief; therefore, the Louisiana law conflicted with the establishment clause of the U.S. Constitution (National Academy of Sciences 1998; Alters and Alters 2001; Moore 2002). This defeat of creationism is viewed as a major impetus for the intelligent design movement.

Who Are the Proponents of Intelligent Design?

In his book, *Myths America Lives By* (2003), Hughes offered a historical account of the development of the myth of the Christian nation. This myth was born in the nationwide religious revival of the Second Great Awakening and fervently persists today as a powerful force in American society. Since the time that our nation's founders established America on Deist beliefs and the necessary principle of separation of church and state, Christian nation proponents have actively sought to demolish this framework and reconstruct American society according to their own religious

viewpoints, making the tenets of American Protestantism central. Hughes (2003, 85) explained:

> *Some Christians were determined to fight the forces of the modern world, to resist the encroachment of secularity, and to preserve a Christian America against all odds. They typically identified Darwin's theory of evolution as the chief culprit, and they hammered that doctrine unmercifully. We know these Christians today as fundamentalists.*



The chief proponents of intelligent design today are Christian fundamentalists and their conservative political organizations. One organization that is central to the intelligent design movement is the Center for Science and Culture, formerly known as the Center for the Renewal of Science and Culture (CRSC). Founded in 1996, the Center, which is affiliated with the conservative Christian think tank, the Discovery Institute, authored a strategic plan entitled *The Wedge Strategy* (1999). This strategy was based on "The Wedge: A Strategy for Defining Truth," a chapter in *Defeating Darwinism by Opening Minds* (Johnson 1997), in which two distinct definitions of science in society are argued: one devoted to unbiased research and the other devoted to explaining all phenomena that employ only natural or material causes (naturalism). Johnson (2000) argued that the philosophical school of naturalism is dominant in our society, not because of its merits, but because of the ideology and paradigm prevalent in today's scientific community. Johnson (2000) asserted that for science to be vigorous and healthy, it also must include alternative theories, such as intelligent causes for the origin of life. The wedge of intelligent design, according to Johnson (2000), is that it reveals the inherent weaknesses of scientific naturalism and allows for a broader, more comprehensive view of the origins of the universe and life consistent with theistic views.

What Are the Goals of the Advocates of Intelligent Design?

The Wedge Strategy (CRSC 1999) outlined a three-phased political action plan for promoting intelligent design as an alternative to evolutionary biology:

- Phase I—scientific research, writing, and publicity;
- Phase II—publicity and opinion making; and
- Phase III—cultural confrontation and renewal.

Each of these phases was designed to achieve two governing goals of the Discovery Institute: (1) to defeat scientific materialism and its destructive moral, cultural, and political legacies; and (2) to replace materialistic explanations with the theistic understanding that nature and human beings are created by God. Ultimately, proponents of

The Wedge Strategy (CRSC 1999) aimed at "establishing intelligent design theory as the dominant perspective in science" and hoped "to see design theory permeate religious, cultural, moral, and political life." An interim goal (CRSC 1999) was to ignite debates in education, life issues, and legal and personal responsibility, and push these debates to the front of the national agenda.

Opponents of Intelligent Design

Opponents of intelligent design scoff at the notion that intelligent design is a new scientific theory. Some even refer to it as intelligent design creationism. They believe that intelligent design is merely a repackaged version of creationism or a contemporary revival of an old design argument proposed by theologian William Paley in 1803 (Nakhnikian 2004). Intelligent design is characterized as a more nebulous form of creationism that is slickly marketed to appeal to a broad segment of Americans. According to Adler (2005, 46), "The battle is being waged under a new banner—not the Book of Genesis, but 'intelligent design,' a critique of evolution couched in the language of science."

Eugenie C. Scott, director of the National Center for Science Education, has tracked the creationists' crusade for more than 30 years. She characterized intelligent design as the most highly evolved form of creationism to date. According to Scott (in Adler 2005, 50), "It's another way of saying God did it. It isn't a model; it isn't a theory that makes testable claims." According to Scott (in Ratliff 2004), intelligent design advocates have been tremendously effective compared to traditional creationists; she described their strategy:

> *To win in the court of public opinion, ID needed only to cast reasonable doubt on evolution. Don't get involved in the details; don't get involved in fact claims. Forget about the age of Earth, forget about the flood, don't mention the Bible. Focus on the big idea that evolution is inadequate. Intelligent design doesn't really explain anything. It says that evolution can't explain things. Everything else is hand waving.*

The current intelligent design controversy is merely an extension of the creationist controversy that erupted during the popularist reform movement. As increasing numbers of teenagers attended secondary school in the 1920s, concern over evolutionary teaching turned into demands for legal action that continue today. Larson (1989, 4) outlined the history of legal battles surrounding the creationist movement and summarized them as "efforts to reconcile publicly supported science teaching with popular opinion." When courts overturned bans on teaching evolution in high school, the creationist movement sought public support for granting equal time for competing scientific ideas. This same appeal to fairness is the tactic now employed by advocates of intelligent design. Because these advocates could not win equal time through the courtrooms, they have shifted the battle to the court of public opinion and to the school board (Larson 1989).

School boards in 19 states and many more school districts are grappling with demands to include the teaching of intelligent design in science curricula (Slevins 2005). Examples of contemporary conflicts in American education between the advocates of intelligent design and the defenders of evolution are presented.

Debates about One Textbook

For more than a decade, one high school-level biology textbook, *Of Pandas and People* (Davis and Kenyon 1993), has been on the frontline of the intelligent design versus evolution battle. School boards from Montana to Alabama and from Texas to Idaho have been deluged with requests to adopt this book (Scott and Uno 1989; Matsumura 1995, 2000; Clark 2004). *Bookwatch Reviews* (National Center for Science Education 1989) provided multiple critiques (all negative) of this text, which challenges the adequacy of evolution theory and proposes intelligent design as a viable alternative. A storm of controversy among science teachers has ensued. Scott and Uno (1989) stated, "Although more slickly-produced than most creationist works, *Pandas* is similarly factually incorrect, and grossly mistakes evolutionary theory. This book has no potential to improve science education and student understanding of the natural world."

The proponents of intelligent design fervently believe in the righteousness of their crusade to defeat scientific materialism and to replace materialistic explanations with the theistic understanding that nature and human beings are created by God.

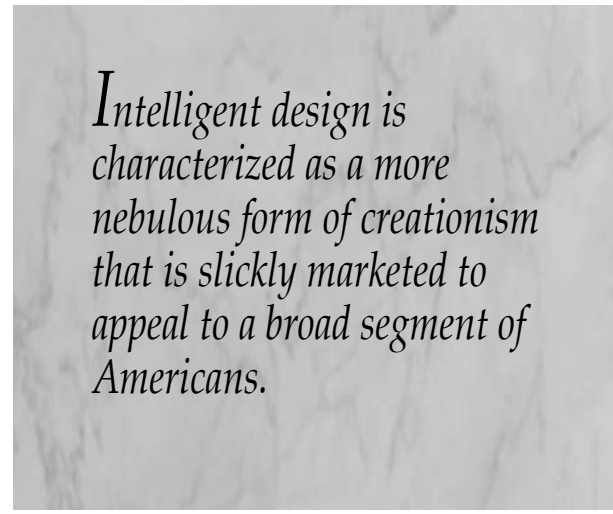
Despite science educators' criticism of the book, teachers such as Roger DeHart of Burlington, Washington, in 1999 sought approval of the school district's Instructional Materials Committee (IMC) to use *Of Pandas and People* in teaching his middle-school science class (Matsumura 1999). When the IMC refused to grant permission to use the controversial text, DeHart succeeded in gaining approval from the school's principal to use portions of the book. The principal defended this action by stating that though DeHart could introduce the notion of irreducible complexity from the *Pandas* textbook, he also must teach a supporting theory of how evolution accounted for complex things (Matsumura 1999). The school official's actions in negotiating this compromise acknowledged the intelligent design fairness strategy of giving equal consideration to opposing scientific theories. Inherent in this compromise is an assumption that intelligent design represents a legitimate scientific challenge to evolution.

Two years earlier, George Gilchrist, a professor of zoology at the University of Washington, publicly criticized the textbook and the legitimacy of its scientific theory. In his critique, Gilchrist (1997, 14) asked, "What sense would there be in presenting an idea as a scientific theory to high school students if the idea were not actually used by working scientists?" The professor conducted a review of more than 5,000 scientific publications to determine the frequency of scientists' use of intelligent design theory and evolution theory. His review of several hundred thousand scientific reports failed to reveal even one biological research study that used intel-

ligent design theory. Evolution theory was used in 6,935 scientific research papers, and the keyword "evolution" was used in 46,749 articles (Gilchrist 1997). Scientific research using intelligent design theory was glaringly absent. Gilchrist (1997, 15) questioned, "Why should we reserve a place in the science curriculum for science that apparently does not exist? Until intelligent design theory can be shown to have any status as a scientific theory of biological organization, it has no place in biology curriculum." Apparently, no real controversy exists among scientists about the theory of evolution.

Despite the negative reviews of *Pandas*, the book is now in its second edition and is vigorously promoted by its publisher in full-page ads in *The Science Teacher* and at teachers' association conventions. On the *Amazon.com*® Web site, the text's publisher, the Foundation for Thought and Ethics (2003), stated:

> *The subject of origins is not only captivating, it is also controversial. Teachers often find themselves walking a tight-rope, trying to teach good science, while avoiding the censure of parents or administrators. In this intellectual and cultural climate, knowing how to teach biological origins can be exceedingly difficult. When respected scientists disagree about which theories are correct, teachers may be forgiven for not knowing which ones to teach.*



Of Pandas and People also is being advanced by members of religiously oriented citizen pressure groups such as Concerned Women for America and Citizens for Excellence in Education. In Alabama, a petition to adopt the textbook was signed by more than 11,000 citizens (Scott and Uno 1989). Lesson plans to accompany the *Pandas* textbook are readily available to teachers and parents online. In an appeal to parents who home school their children, one Internet source of lesson plans, the Heart of Wisdom (2006), described its educational philosophy: "The Bible is the center of education, and all subordinate studies should be brought into the circle of light radiating from thence. Academics play an important part, but they are secondary." Meanwhile, State Representative Cynthia Davis (R-MO) (in Banerjee 2004) introduced a bill to the state legislature requiring biology textbook publishers who sell to school districts in Missouri to include at least one chapter with alternative theories to evolution. In defense of the bill, Davis (in Banerjee 2004) explained:

> *The bill reflects what people want. These are common sense, grass-roots ideas from the people I represent, and I'd be very surprised if the majority of legislators didn't feel*

> *they were the right solutions. It's like when the highjackers took over those four planes on September 11 and took people to a place where they didn't want to go. I think a lot of people feel that liberals have taken our country somewhere we don't want to go. I think a lot more people realize this is our country and we're going to take it back.*

Not coincidentally, the contemporary arguments put forth by advocates for the inclusion of intelligent design in public school textbooks represent populist notions and conservative Christian ideology. These elements have been at the forefront of historic battles surrounding the inclusion of evolution in textbooks since Darwin's theory first gained support among scientists (Larson 1989). Apparently, the skirmishes over the inclusion of intelligent design in textbooks are far from reaching an armistice.

The Debate over Science Curriculum Standards in Ohio

During 2002, the Academic Content Standards for the State of Ohio were being revised, partially in response to accountability requirements in the No Child Left Behind Act of 2001 (Bilica and Skoog 2004). The 2002 minutes of the State Board of Education (Ohio Department of Education [ODE] 2002a) do not accurately reflect the intensity of the debate that occurred over the writing, review, and approval of the science standards. Public media, primarily Ohio and national newspapers and public radio broadcast transcripts, provided a more detailed and accurate portrayal of the hotly contested debate.

What kind of knowledge do we want our children to learn in science class?

By law, the 19-member Board of Education was required to develop and adopt Academic Content Standards for grades K–12 by December 31, 2002. Writing the new science standards was the responsibility of a panel of 45 volunteers, mainly science educators, parents, employers, scientists, and leaders chosen by staff members of the ODE (Mangels and Stephens 2002b). The Standards Committee of the State Board of Education oversaw the panel that wrote the revised standards.

On Sunday, January 13, 2002, the Standards Committee met to review the first draft of the new science standards. The draft called for teaching the evolution of life, which previously had been taught in Ohio under the more ambiguous title "change over time" (*Akron Beacon Journal* 2002; Mangels and Stephens 2002a). John Calvert, a Kansas City lawyer and cofounder of the Intelligent Design Network, was allowed to address the Standards Committee for 30 minutes. He described intelligent design as a groundbreaking paradigm and urged board members to permit Ohio school children to study this alternative origin theory. Scientists who attended the meeting were not allowed to present rebuttals (Mangels and Stephens 2002a). During the meeting, five of the nine Standards Committee members expressed dissatisfaction

that the new draft of the science standards did not include the teaching of intelligent design. One committee member claimed that the writing panel stacked the deck in favor of evolution, and another member called for immediate changes in the composition of the advisory group and the development of science standards with which Ohioans could be comfortable. She noted that Ohio could be on the cutting edge as the first state to include intelligent design in its curriculum (Associated Press 2002a; Stephens and Mangels 2002a). Only one Standards Committee member (Siegel 2002) spoke against these proposals: "I can't go along with this. Somebody's dreamed up another way of expressing creationism, for heaven's sake." One board member was quoted as saying, "If a vote were held today, the intelligent design concept would get a thumbs up from the Board of Education" (Siegel 2002).

The preponderance of evidence suggests that the battles between intelligent design proponents and the defenders of evolution will continue unabated.

Staff members of the ODE cautioned the Board that presenting only one alternative to evolution could evoke lawsuits from groups whose views were not represented. Staffers also warned that the advisory panel probably would resign rather than write standards that contradicted their reasoned judgment and expert opinion of what students should be taught in science classes. Standards Committee cochair Joe Roman asked the Committee to delay voting until the Board's advisors could investigate the legal, political, and policy implications of these proposals (Mangels and Stephens 2002a). One outcome of the meeting was that the Standards Committee would sponsor a debate, in a public forum open to all Ohioans, to examine only one alternative to evolution—intelligent design.

This public debate on evolution and intelligent design, held at the Franklin County Veterans Memorial Auditorium in downtown Columbus, Ohio, drew 1,500 attendees (Associated Press 2002b; Fields 2002). Seventeen of the 19 Board members attended the debate and the press conference that followed. The debate placed two proponents of intelligent design, Stephen Meyer and Jonathon Wells from the Discovery Institute's Center for the Renewal of Science and Culture, against two intelligent design opponents, physicist Lawrence Krauss from Case Western Reserve University and biologist Kenneth Miller from Brown University.

During the debate, Meyer proposed that the State Board of Education create science guidelines that would allow teachers to discuss the controversy and permit students to learn about the scientific arguments for and against evolution (Fields 2002). Meyer added that Ohio voters overwhelmingly favored this approach and

that adopting intelligent design would be good politics (Feran 2002). Krauss asserted that intelligent design does not provide a viable alternative to Darwin's theory of evolution because intelligent design offers no hypotheses to test and, therefore, is not science (Fields 2002). Krauss added that framing the debate in a two-on-two format may appear fair, but gives intelligent design a credibility it doesn't deserve. Krauss (in Mangels 2002) said, "A true representation of the ratio of support and evidence for evolution versus intelligent design would present 10,000 scientists on one side and one representative of the Discovery Institute on the other side." Miller stated that science deals only with natural processes, while intelligent design is merely a criticism of evolutionary theory leading to an inference. Miller and Krauss agreed that science cannot address the question of whether a divine intelligence is behind the creation of life (Feran 2002).

For science to be vigorous and healthy, it also must include alternative theories, such as intelligent causes for the origin of life.

Following the debate, an Associated Press survey (2002d) showed that Board of Education members remained split over the issue of teaching evolution and intelligent design. Seven members favored teaching evolution as an unproven theory and opening the door to other theories of the origin of life, another seven members supported the teaching of evolution only, and five remained neutral or refused to take a public stance on the issue (Sidoti 2002b).

As the controversy received increased attention in the national news media, other stakeholders began to enter the debate. The presidents of Ohio's 13 public universities sent a letter to the Board of Education requesting that alternative ideas to evolution be excluded from the state science curriculum (Hoffman 2002; Ohlemacher 2002). Governor Bob Taft, who appointed a majority of the members on the Board, chose to stay neutral, while his opponent in the November 2002 elections, Tim Hagan, took a stand against intelligent design. Hagan stated that Ohio would be unable to attract members of the science community to high-tech jobs if the Board adopted intelligent design into the science curriculum (Willard and Dyer 2002).

Some Ohio legislators decided to take an active role in the controversy. Two bills, sponsored by Columbus Republican Linda Reidelbach (Zeleznik 2002), were introduced into the State Legislature's Education Committee. In her testimony during the first hearing of the bills, Reidelbach stated that the Board of Education refused to consider other scientifically proven origins theories. Her first bill mandated objectivity and academic rigor in the classroom by requiring teachers to explain that

proving any of the theories presented is impossible and encouraging teachers to even-handedly teach other origins theories, such as intelligent design. The second bill required legislative approval before any of the new science standards were implemented.

Newspapers in Ohio's major cities contained numerous articles and editorials about the science curriculum standards debate. Most editorials strongly favored exclusion of intelligent design from the K–12 science curriculum, and many characterized the intelligent design initiative as a national embarrassment to Ohio. *The Plain Dealer* (2002a) editorialized:

> *Proponents of this 'intelligent design' theory have the board's attention. They don't wear plaid suits or stand on the back of a wagon. They wear nice sport coats and use PowerPoint presentations. Still, they are peddling snake oil and the board should not buy any of it. One wonders what's next on the board agenda. A meeting with the Flat Earth Society to revise the geography curriculum?*

The *Dayton Daily News* (2002) reported:

> *It was a show trial of the absurd, brought to you by Ohio's State Board of Education. They highlighted gaps in our understanding of life science and posited thinly veiled, religious-based doctrine as alternative scientific explanation, typically involving the inference of an 'intelligent designer.' The suggestion that God or possibly aliens could be the designer was somehow supposed to mitigate the obviously religious construct. The discussion was an embarrassment. Ohio has been made to look like a backward place where leaders must bow to the religious right.*

What sense would there be in presenting an idea as a scientific theory to high school students if the idea were not actually used by working scientists?

The science curriculum writing team, apparently encouraged by the tenor of these news articles, incorporated an even stronger stance on teaching evolution into the second draft of the science curriculum standards, released on April 1, 2002. This draft also provided a new definition of science, worded to eliminate supernatural explanations of the origin of life by limiting scientific knowledge to natural explanations for natural phenomena (Mangels and Stephens 2002b). Though some members of the writing team did not feel that a definition of science was necessary, others felt that a clear definition would keep nonscientific ideas, such as intelligent design, out of the classroom (Sidoti 2002a). The writing team's actions were criticized by Board of Education member Deborah Owens-Fink (2002), who character-

ized the team as entrenched and unwilling to consider input from the public. She stated that she intended to make changes to the curriculum standards at the Board level. The writing team claimed to have received 912 e-mails, letters, and petitions from scientists, the public, legislators, and educators; approximately half favored the teaching of evolution alone and the other half favored the inclusion of intelligent design. The writing team and advisors suggested that ultimately the science standards had to be based on the best consensus of scientific thinking, rather than on popular opinion (Associated Press 2002c; Mangels and Stephens 2002b). The Board of Education continued to post drafts of the new science standards on its Web site for public review and comment. The public and key stakeholders also reviewed the draft standards at 40 focus group meetings (ODE 2002b).

Public opinion polls have shown that teaching science in science class and teaching alternative origin theories in social studies or religious settings constitutes an acceptable solution for most Americans.

The Plain Dealer sponsored a telephone opinion poll of 1,507 randomly selected Ohioans between May 28 and June 4, 2002. The poll (*The Plain Dealer* 2002b) showed that 59 percent of the respondents supported teaching both evolution and intelligent design in public school. Ohioans indicated that they favored teaching intelligent design because it appealed to their sense of fairness. The poll also found that the public was not familiar with what intelligent design entails, nor were they very involved in the debate. Two-thirds of the respondents believed that God is the designer. In the poll, nearly a third of Ohioans described themselves as believers in the literal interpretation of Genesis—God created the universe and all life in six days, less than 10,000 years ago. The poll found that support for teaching intelligent design alongside evolution transcended geography, race, household income, and education levels. Most Ohioans, however, weren't completely at ease with challenging evolution in the science classroom. They preferred to have their children presented with evolution-conflicting beliefs in the home, religious institution, or in a class other than science. Proponents of intelligent design were encouraged by the results, while evolutionists like Eugenie C. Scott (in Stephens and Mangels 2002b) said, "This tells me that science education has a long way to go". Following the opinion poll, proponents on both sides of the debate renewed their lobbying efforts toward those who would make the final decision.

On October 18, the Board of the American Association for the Advancement of Science ([AAAS] 2002) published a resolution opposing teaching intelligent design in science classrooms. According to Pennock (2003), this resolution was intended to send a clear message to the State Board of Education:

> *Intelligent design theory represents a challenge to the quality of science education; the ID movement has failed to offer credible scientific evidence, or a scientific means of testing its claims, and that the lack of scientific warrant for so-called 'intelligent design theory' makes it improper to include as part of science education; therefore AAAS urges citizens across the nation to oppose the establishment of policies that would permit the teaching of 'intelligent design theory' as part of the science curriculum in public schools, and AAAS calls upon its members to assist those engaged in overseeing science education policy to understand the nature of science, the content of contemporary evolutionary theory, and the inappropriateness of 'intelligent design theory' as subject matter for science education.*

On October 15, 2002, the Board of Education passed a resolution of intent to adopt the science standards, with changes. First, the following phrase was included in Benchmark H: "Describe how scientists continue to investigate and critically analyze aspects of evolutionary theory" (ODE 2002b; 2002c). Second, a new definition of science was added: "Recognize that science is a systematic method of continuing investigation, based on observation, hypothesis testing, measurement, experimentation, and theory building, which leads to more adequate explanations of natural phenomena" (Science Excellence for All Ohioans 2002). The AAAS (2002) predicted that these changes would undermine the teaching of evolution and open the door to teaching intelligent design in Ohio science classrooms. The Board of Education continued to solicit public comments about the science standards and, as the state-level debate continued, one local school board passed a resolution to support the inclusion of intelligent design in classes in addition to other scientific theories.

Finally, on December 10, 2002, the Ohio Academic Content Standards for Science (K–12) were adopted, but with one significant amendment. The Board added the phrase: "The intent of this indicator does not mandate the teaching or testing of intelligent design to Benchmark H" (ODE 2002c). During the meeting, Joe Roman characterized the standards as the best science standards to provide a foundation for what students need to know over the next 12–15 years. He justified the necessity of the amendment by stating that the Board's actions in October had been misrepresented by adults who used them to fight their own battles. The motion was passed unanimously by all 19 members of the State Board of Education (ODE 2002c).

Conclusion

Stephen Jay Gould wrote in the forward to *Defending Evolution* (Alters and Alters 2001, 1):

> *I have often, in my writings, deplored our all-too-human tendency to dichotomize complex issues into an overly simplified contrast of us against them—the good guys versus the bad guys. Nonetheless, at least in the arena of proper response to social or political struggles, integrity often demands that we clearly advocate one side of a dispute, even while we strive to understand the complexity of motives, and the range of beliefs, among our adversaries. Scientists and educators must give a clear uncompromising response to long-standing attempts by creationists either to eliminate (or*

> *seriously adulterate) the teaching of evolution, or to insert, by legal or social fiat, the nonscientific 'alternative' of oxymoronic 'creation science' into the curriculum of public school science courses. We must resist these efforts with all our heart and force, for the very integrity of education hangs in the balance.*

The proponents of intelligent design fervently believe in the righteousness of their crusade to defeat scientific materialism and to replace materialistic explanations with the theistic understanding that nature and human beings are created by God. This article has provided two specific examples of their successes in achieving their goal of igniting debates in education. However, as we witness the continuing activism by Christian fundamentalists in pushing their agenda within the context of a very favorable political climate, we should stop and ask ourselves one fundamental question: What kind of knowledge do we want our children to learn in science class? If the answer is science, then we must permit scientists to define academic content standards, and we should do everything possible to support science educators in teaching this content. If we also value other types of knowledge, we must find an appropriate setting—be it the social studies classroom, the home, or the religious institution—to impart this other knowledge. With all due respect to Gould, his dichotomization of the argument rules out an alternative solution. Many scientists are comfortable with their dualistic beliefs that nothing in biology makes sense except in light of evolutionary theory and that a creator played some role in the creation of life. The first belief is adequately supported by scientific evidence and is accepted as theory within the scientific community. The second belief, which cannot be proved or disproved by naturalistic science, constitutes a religious belief. While intelligent design has no place in the science classroom, it could be discussed in other forums. Public opinion polls have shown that teaching science in science class and teaching alternative origin theories in social studies or religious settings constitutes an acceptable solution for most Americans.

This issue eventually will reach the U.S. Supreme Court, and that court will find, as it did in Edwards v. Aguillard, that intelligent design constitutes a religious belief and does not warrant equal time in the science classroom. Still, such a decision will not end the debate. The preponderance of evidence suggests that the battles between intelligent design proponents and the defenders of evolution will continue unabated—a prime example of an enduring cultural conflict in American education.

References

Adler, J. 2005. Doubting Darwin. *Newsweek*, February 7, 44–50.

Akron Beacon Journal. 2002. Editorial: Design on Ohio, A scheme of 'controversy,' compromise, and curriculum, March 13.

Alters, B. J., and S. M. Alters. 2001. *Defending evolution: A guide to the creation/evolution controversy*. Boston: Jones and Bartlett.

American Association for the Advancement of Science. 2002. AAAS Board resolution on intelligent design theory. Available at: *www.aaas.org/news/releases/2002/1106id2.shtml*.

Associated Press. 2002a. Board reviews science standard. *The Cincinnati Post*, January 16.

Associated Press. 2002b. 'Intelligent design' debate to draw crowd, 3,920 seat hall reserved for state school board meeting on Monday. *Akron Beacon Journal*, March 9.

Associated Press. 2002c. Science teaching debate escalates. *The Cincinnati Post*, April 2.

Associated Press. 2002d. Poll finds support for intelligent design, 59 percent of Ohioans favor teaching theory alongside evolution in public schools, paper says. *Akron Beacon Journal*, June 10.

Banerjee, N. 2004. Christian conservatives press issues in statehouses. *The New York Times*, December 13.

Behe, M. J. 1996. *Darwin's black box: The biochemical challenge to evolution*. New York: Free Press.

Behe, M. J. 2005. Design for living. *The New York Times*, February 7.

Bilica, K., and G. Skoog. 2004. Ohio teachers on teaching evolution and counter-evolutionary concepts in biology classrooms. *Reports of the National Center for Science Education* 24(1). Available at: *www.ncseweb.org/resources/rncse_content/vol24/8949_ohio_teachers_on_teaching_evol_12_30_1899.asp*.

Center for the Renewal of Science and Culture. 1999. *The wedge strategy*. Available at: *www.antievolution.org/features/wedge.html*.

Clark, V. 2004. Shall we let our children think? *Reports of the National Center for Science Education* 24(2). Available at: *www.ncseweb.org/resources/rncse_content/vol24/5568_shall_we_let_our_children_thin_12_30_1899.asp*.

Davis, P., and D. H. Kenyon. 1993. *Of pandas and people: The central question of biological origins*, 2nd ed. Richardson, TX: Foundation for Thought and Ethics.

Dayton Daily News. 2002. Creationism has no place in classroom, March 13.

Dembski, W. A., and M. Ruse, eds. 2004. *Debating design: From Darwin to DNA*. New York: Cambridge University Press.

Feran, T. 2002. Human origin debate hasn't evolved much. *The Plain Dealer*, March 12.

Fields, R. 2002. Educators debate how life began, Discussion on evolution, 'design' theories heats up. *Akron Beacon Journal*, March 12.

Foundation for Thought and Ethics. 2003. Editorial review of *Of pandas and people*, by P. Davis and D. H. Kenyon. Available at: *www.amazon.com/exec/obidos/ASIN/0914513400*.

Gilchrist, G. W. 1997. The elusive scientific basis of intelligent design theory. *Reports of the National Center for Science Education* 17(3): 14–15. Available at: *www.natcenscied.org/resources/articles/2083_the_elusive_scientific_basis_o_3_16_2001.asp*.

Heart of Wisdom. 2006. Heart of wisdom: Teaching approach. Available at: *http://heartofwisdom.com/artman/publish/cat_index_39.shtml*.

Hoffman, S. 2002. A governor's position evolves. *Akron Beacon Journal*, March 14.

Hughes, R. T. 2003. *Myths America lives by*. Chicago: University of Illinois Press.

Johnson, P. E. 1997. *Defeating Darwinism by opening minds*. Downers Grove, IL: InterVarsity Press.

Johnson, P. E. 2000. *The wedge of truth: Splitting the foundations of naturalism*. Downers Grove, IL: InterVarsity Press.

Larson, E. J. 1989. *Trial and error: The American controversy over creation and evolution*. New York: Oxford University Press.

Mangels, J. 2002. Darwin, 'Design' face off at hearing. *The Plain Dealer*, March 12.

Mangels, J., and S. Stephens. 2002a. Evolution targeted in curriculum study: Ohio's guidelines may be rewritten. *The Plain Dealer*, January 15.

Mangels, J., and S. Stephens. 2002b. Curriculum team backs evolution. *The Plain Dealer*, March 16.

Matsumura, M. 1995. Texas: No pandas for Plano. *Reports of the National Center for Science Education* 15(1): 7. Available at: *www.ncseweb.org/resources/articles/6190_40_matsumura_1995_texas__11_24_2004.asp*.

Matsumura, M. 1999. A new tactic for getting 'creation science' into classrooms? *Reports of the National Center for Science Education* 19(3): 24–26. Available at: *www.ncseweb.org/resources/rncse_content/vol19/5108_a_new_tactic_for_getting_crea_12_30_1899.asp*.

Matsumura, M. 2000. Intelligent design in Pratt County Kansas. *Reports of the National Center for Science Education* 20(4): 4. Available at: *www.ncseweb.org/resources/rncse_content/vol20/6029_intelligent_design_in_pratt_co_12_30_1899.asp*.

Moore, J. A. 2002. *From genesis to genetics: The case of evolution and creationism*. Berkeley: University of California Press.

Nakhnikian, G. 2004. It ain't necessarily so, An essay review of intelligent design creationism and its critics: Philosophical, theological, and scientific perspectives. *Philosophy of Science* 71(4): 593–604.

National Academy of Sciences. 1998. *Teaching about evolution and the nature of science*. Washington, DC: National Academy Press.

National Center for Science Education. 1989. Reviews about *Of pandas and people. Bookwatch Reviews* 2(11). Available at: *www.natcenscied.org/article.asp?category=21*.

Newport, F. 2004. Third of Americans say evidence has supported Darwin's evolution theory. *Gallup Poll*. Princeton, NJ: The Gallup Organization. Available at: *http://poll.gallup.com/content/default.aspx?ci=14107*.

Ohio Department of Education. 2002a. State Board of Education minutes, March 10–12. Available at: *www.ode.state.oh.us/board/meetings/march02/minutes.asp*.

Ohio Department of Education. 2002b. Science academic content standards. Available at: *www.ode.state.oh.us/academic_content_standards/acsscience.asp*.

Ohio Department of Education. 2002c. State Board adopts academic content standards for science and social studies. Available at: *www.ode.state.oh.us/board/meetings/December02*.

Ohlemacher, S. 2002. Legislators keep 'intelligent design' at arm's length: Issue left with state school board. *The Plain Dealer*, March 13.

Owens-Fink, D. 2002. Columnist sows confusion on evolution. *The Plain Dealer*, March 22.

Pennock, R. T. 2003. Creationism and intelligent design. *Annual Review of Genomics and Human Genetics* 4(Sept.): 143–63.

The Plain Dealer. 2002a. Editorial: Get back to science, intelligent design advocates have had a respectful hearing; Leaders should not let them make a monkey of Ohio. *The Plain Dealer*, March 19.

The Plain Dealer. 2002b. Ohio issue poll. *The Plain Dealer*, June 9.

Ratliff, E. 2004. The crusade against evolution. *Wired Magazine* 12(10). Available at: *www.wired.com/wired/archive/12.10/evolution.html*.

Science Excellence for All Ohioans. 2002. Adoption of Ohio science standards. Available at: *www.sciohio.org/sbe1015.htm*.

Scott, E. C., and G. E. Uno. 1989. Introduction to NCSE Bookwatch reviews for *Of pandas and people. Bookwatch Reviews* 2(11). Available at: *www.ncseweb.org/resources/articles/5403_20_scott__uno_1989_intro_11_24_2004.asp*.

Sidoti, L. 2002a. Evolution debate rages in Ohio, Second draft of standards includes definition of science that limits 'intelligent design' teaching. *Akron Beacon Journal*, March 16.

Sidoti, L. 2002b. Ohio school board split on evolution, Survey of 19 members finds no clear majority for intelligent design. *Akron Beacon Journal*, March 25.

Siegel, R. 2002. Ohio's intelligent design forum. *All Things Considered*, National Public Radio broadcast, March 12.

Slevins, P. 2005. Battle on teaching evolution sharpens. *The Washington Post*, March 14.

Stephens, S., and J. Mangels. 2002a. Education panel to get some tutoring: Experts to explain evolution, creationism. *The Plain Dealer*, January 16.
Stephens, S., and J. Mangels. 2002b. Poll: Teach more than evolution: A majority of those surveyed want evolution, intelligent design to get equal time in school. *The Plain Dealer*, June 9.
Willard, D. J., and S. Dyer. 2002. Opponent feels Taft should be clear on science issue, Governor says he's watching classroom biology issue closely, Hagan says he should take a stand. *Akron Beacon Journal*, March 12.
Zeleznik, J. 2002. Bill would encourage other origin theories in classrooms. *Dayton Daily News*, March 6.

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