

SAVING SOULS

Creationists have stepped up tactics and propaganda in the US to promote their cause. **Heather Weaver** assesses the damage

In 1925, the Tennessee Legislature passed the Butler Act, a law that prohibited public school employees from teaching 'any theory that denies the Story of the Divine Creation of man as taught in the Bible', including any theory 'that man has descended from a lower order of animals'. The statute led to the prosecution and conviction later that year of John T. Scopes, a high school biology teacher who dared to discuss evolution with his students. Scopes was represented by the American Civil Liberties Union (ACLU), a then relatively new organisation dedicated to preserving individual rights and liberties guaranteed by law. The proceedings – dubbed the 'Scopes Monkey Trial' by the media – attracted international attention, and the conviction was ultimately overturned. The Tennessee law was never enforced again and similar evolution bans across the country were, over a number of decades, defeated.

Eighty-six years later, the teaching of evolution is no longer a criminal act in any state. Indeed, though an organised movement of creationists has doggedly pursued various strategies to gain judicial approval for anti-evolution laws and other policies that seek to inject creationist beliefs into

public school science curricula, American courts have repeatedly ruled that it is unlawful to censor the teaching of evolution in public schools or to use those schools to promote religious doctrine such as creationism. Despite its spectacular losses in the courts of law, however, the creationist movement marches on, and there is troubling evidence that it is growing increasingly successful in the court of public opinion, the political arena and public school classrooms.

Earlier this year, for example, the ACLU received a complaint from the parent of a fifth-grade student at an Alabama public school. His daughter's teacher had abruptly halted a science lesson after the topic of evolution had come up in the class textbook. The teacher announced that she would not read or discuss the issue further because 'some of us believe in God' and 'some of us believe that the world was made in seven days and that God created man and the trees'. When the ACLU pressed the school district regarding the incident, officials dismissed the teacher's actions as a 'stray comment' and claimed that they follow all state educational guidelines, which include teaching biological evolution. The ACLU continues to investigate the incident and is seeking documents that might help show whether, in fact, the school district's teachers are censoring evolution lessons in science classes. If so, however, they would scarcely be alone.

A study published in *Science* last January showed that only 28 per cent of US public high school biology teachers provide adequate instruction in evolution. According to the study, which was based on a national survey of public high school biology teachers, 13 per cent of teachers 'explicitly advocate creationism or intelligent design by spending at least one hour of class time presenting it in a positive light'. The remaining 60 per cent 'fail to explain the nature of scientific inquiry, undermine the authority of established experts, and legitimise creationist arguments'. As appears to be the case with the Alabama school teacher who refused to continue with her science lesson, many teachers within this failing 60 per cent no doubt intentionally undermine the teaching of evolution because they perceive it as conflicting with their personal religious views.

Many other teachers, however, merely want to avoid controversy and a backlash from students and parents, according to the study's authors, Penn State University political scientists Michael Berkman and Erik Plutzer. As Plutzer explained to *Ars Technica*, a science and technology news website: 'The challenge is for these teachers to stay out of trouble. They have to teach in a cautious way to avoid complaints from either side. They want to avoid what everyone wants to avoid, which is being called to the principal's office.'

With polls showing that more than two-thirds of Americans support teaching creationism in public schools – either as a replacement for or alongside evolution – it is not surprising that this caution has led to instruction that not only understates the scientific case for evolution but also gives credence to and endorses creationist religious beliefs.

Creationist leaders are well aware of their success on this front and will not ease the pressure on teachers any time soon. They blame the discoveries of modern science, especially evolution, for destroying traditional notions of both God and man, giving rise to moral relativism, and thereby causing a host of societal ills. For them, then, the fight against evolution is a central battle in the so-called culture wars; it is a fight to reclaim our humanity and save our souls by restoring America and Americans to God. With the stakes so high, creationists will thus continue to do whatever they must to suppress the teaching of evolution in public schools, no matter the cost; and in light of the courts' refusal to sustain outright attacks on evolution or permit teaching creationism alongside it, that means targeting teachers directly and indirectly.

Among other tactics employed in recent years, creationists have sponsored a barrage of proposed laws that would authorise teachers to introduce fabricated 'weaknesses' of evolution into individual science classes. They have also launched a high-profile anti-evolution propaganda campaign. These tactics aim to popularise creationist doctrine and anti-evolution beliefs. They ultimately seek to fashion a cultural environment that further emboldens willing teachers to flout the law by teaching creationism outright, while the remaining teachers are bullied into presenting students with incomplete and inaccurate information about evolution. Unfortunately, if the *Science* study is any indication, these tactics appear to be working.

To grasp just how insidious the creationist movement has become, it is helpful to understand its history. As Eugenie Scott and Nicholas Matzke of the National Center for Science Education chronicle in their 2007 paper, 'Biological Design in Science Classrooms', significant opposition to evolution education began in the 1920s 'as a byproduct of the acrimonious split of American Protestantism into "fundamentalist" and "modernist" camps'. While modernists treated the Bible as 'allegorical and a product of human history', fundamentalists adopted 'a strict doctrine of biblical inerrancy, wherein the entire text of the Bible was considered to be divinely inspired truth and without error (and usually, but not always, to be interpreted literally)'.

Fundamentalists' original focus on evolution education in the public schools makes even more sense for the contemporary creationist movement.

Thanks to mandatory attendance laws, the public schools offer access to a wide audience of students and families, including those of other faiths and non-believers. By targeting students in elementary and secondary school, creationists reach children when they are most impressionable and likely to internalise religious beliefs. By delivering religious doctrine through trusted teachers, they increase the likelihood that students will be less resistant to or questioning of religious doctrine, especially where, as is often the case today, the religious doctrine is cloaked in pseudo-science terms.

But the advantages of this approach are the very factors that have doomed it under the law. The First Amendment of the US Constitution contains the 'Establishment Clause', which prohibits the government from promoting or advancing religion. The US Supreme Court, the highest court in the country, has been particularly vigilant about enforcing this principle in public schools because of compulsory attendance laws, the vulnerability of children, and the special trust that families place in the

government to educate their children with exploiting that opportunity to religiously indoctrinate them. As a result, the Supreme Court and lower courts have repeatedly rejected both efforts to incorporate instruction in creationism, creation-science, and intelligent design into public school curricula and efforts to undermine the teaching of evolution because of its perceived conflict with the Bible. After each judicial defeat, however, creationists have adapted their tactics and unrepentantly pressed forward, prompting many to comment on the irony of an evolving anti-evolution movement.

Though the Scopes Trial shone a light on the exploitation of the public schools to promote creationism and censor teaching about evolution, due to the fundamentalist movement and laws such as the Butler Act, evolution education in secondary public schools largely ground to a halt for several decades. It was not, as Scott and Matzke note, until the 50s and 60s – when fears arose that the country was falling behind the Soviet Union in technology and science – that evolution was reintroduced into many public school curricula via federally funded and commissioned textbooks written by scientists.

That effort was helped along by a 1968 Supreme Court decision overturning a state ban on teaching evolution in public schools. Susan Epperson, a tenth grade biology teacher at Little Rock Central High School, challenged the Arkansas law, which prohibited public school teachers from teaching, or using textbooks that teach, human evolution. Much to the dismay of fundamentalists, the Supreme Court agreed that the law was an unconstitutional ‘attempt to blot out a particular theory because of its supposed conflict with the biblical account, literally read’.

The events of the 50s and 60s, as well as the Epperson ruling, prompted supporters of creationism to alter their approach. They next tried to dress up their religious belief as ‘creation-science’ and mandate that it be given ‘equal time’ alongside evolution in science classes. The Supreme Court once again rebuffed the attempt to suppress evolution teaching and promote creationism. In 1987, the Court struck down Louisiana’s Balanced Treatment for Creation-Science and Evolution-Science in Public School Instruction Act. The law forbade the teaching of evolution in public schools unless accompanied by instruction in creation-science. The Court ruled that the ‘state may not constitutionally prohibit the teaching of evolution in the public schools, for there can be no non-religious reason for such a prohibition’. Nor, the court added, could the state require ‘the presentation of a religious viewpoint that rejects evolution in its entirety’.

Unable to banish evolution from public school classrooms and barred from using public schools to promote creationism, the creationist

movement shifted course again, claiming to have developed a new scientific theory to rival evolution: so-called 'intelligent design', which posits that nature is so irreducibly complex that it must have been created by an 'intelligent designer'. In 1998, the Discovery Institute, a leading purveyor of intelligent-design creationism, produced a document detailing its plan to use intelligent design theory to drive a 'wedge' into the scientific community, combat the growing acceptance of evolution in America, and 'replace it with a science consonant with Christian and theistic convictions'. Key prongs of the wedge strategy included: (1) producing 'solid' scholarship, research and argument (2) formally integrating teaching about intelligent design into public school science standards and curricula and (3) popularising design theory among influential leaders, the media, and in the 'broader culture'.

The movement never came close to reaching the first goal: intelligent design proponents were unable to produce any credible scientific research to buttress their belief. In addition, the campaign to formally incorporate intelligent design into public school curricula as a legitimate alternative to evolution also failed after a federal judge ruled in 2006 that intelligent design is just another extension of creationism, there is no scientific evidence to support it, and it cannot be taught in public schools.

The case *Kitzmiller v Dover Area School District* was brought by the ACLU, Americans United for Separation of Church and State and the law firm Pepper Hamilton on behalf of parents and students who objected to a District policy that aimed to make students 'aware of gaps/problems in Darwin's theory and of other theories of evolution including, but not limited to, intelligent design'. The policy required science teachers to instruct all ninth-grade biology students that evolution is a theory and 'not a fact', that '[g]aps in the Theory exist for which there is no evidence' and that '[i]ntelligent Design is an explanation of the origin of life that differs from Darwin's view'.

During a six-week trial in the case, federal district court Judge John Jones, an appointee of then-president George W. Bush, heard testimony from experts regarding the nature of evolution and intelligent design. Like the Scopes Trial, the Dover proceedings attracted national and international attention and was widely seen as a test of the influence that the modern creationist movement – now more sophisticated, better organised and well funded – could wield in the legal arena.

Plaintiffs' lawyers argued that intelligent design is a religious belief that simply does not meet the rigorous requirements of science and thus should not be presented alongside evolution in public school science

classes. In the end, the court agreed, sharply rebuking the claim that intelligent design is a valid scientific theory. In a sweeping review of the evidence, the court ruled that science is 'limited to empirical, observable and ultimately testable data', while intelligent design (like its predecessor, creation-science) 'is reliant upon forces acting outside of the natural world, forces that we cannot see, replicate, control or test, which have produced changes in this world'. The court concluded that, although 'Darwin's theory of evolution is imperfect ... the fact that a scientific theory cannot yet render an explanation on every point should not be used as a pretext to thrust an untestable alternative hypothesis grounded in religion into the science classroom or to misrepresent well-established scientific propositions'.

Despite these failures, the wedge strategy was successful in one key respect – thrusting evolution and creationism back in the spotlight in a way that had not been achieved since the Scopes Trial. The Dover trial placed

evolution at the center of the culture wars, popularising intelligent design and gaining prominent, vocal political support for teaching it in public schools. At the height of the coverage and controversy, Discovery Institute operatives and other creationists pressed their message everywhere they could, including in newspapers and other print media, television, and radio. This expansive exposure was an enormous boost to the creationist movement, and it set the stage for future propaganda campaigns. It also led then-president George W Bush to endorse the teaching of intelligent design in public schools, lending more credibility to the movement. Bush, who had previously stated that the jury is still out on evolution, declared during a 2005 press conference that '[b]oth sides ought to be properly taught ... so people can understand what the debate is about'.

After the court's ruling in Dover, creationism advocates were again forced to adapt their legal strategies. Their hopes of formally incorporating creationism, via intelligent design theory, into public school curricula dashed, they turned to subtler, more indirect ways to undermine evolution education. Drawing on intelligent design theory's argument that evolution contains 'gaps' in information, they have increasingly focused on the claim that there is controversy in the scientific community regarding the purported 'strengths and weaknesses' of evolutionary theory. They attack those who oppose incorporating this alleged controversy into science curricula as trampling free speech and seeking to brainwash students against critical analysis of scientific matters.

Specifically, under the pretexts of protecting the academic freedom of those who question evolution and fostering students' critical thinking skills, creationism advocates have been instrumental in proposing a number of state laws that would encourage and authorise public school teachers to present the so-called 'weaknesses' of evolution and other purportedly controversial scientific theories, such as global warming. More than 40 bills of this type have been proposed in 13 states over the past seven years. Creationists have also sought to inject the 'weaknesses' argument into state science educational standards, which govern public school science curricula and textbook approval processes.

The invocation of 'academic freedom' and 'critical analysis' to defend and advance a campaign singularly aimed at censoring proven scientific principles and promoting, in their stead, untested and unverifiable religious ideology would be laughable if it weren't for the serious risk that these tactics pose to sound science education. As Judge Jones so artfully laid out in the Dover case, there is, of course, no controversy in the scientific community

about the soundness of evolution as a scientific principle any more than there is a dispute over the validity of the theory of gravity. The purported ‘weaknesses’ that sponsors of these measures hope will be presented to students are recycled claims – universally rejected by scientists – that have been made for years by creationism and intelligent design advocates. There is no academic freedom in the right to provide demonstrably false information to students, and ensuring that information presented in science classes meets basic, well-established scientific standards enhances students’ ability to engage in critical analysis.

Workshops declare that evolution is ‘bad science’

Fortunately, due to strenuous opposition by the ACLU and other groups, nearly all of these legislative efforts have, thus far, been defeated. (Louisiana remains the only state to have passed an ‘academic freedom’ bill – the Louisiana Science Education Act.) But the campaign of misinformation has nevertheless been remarkably effective in confusing the public about the scientific support for evolution. While 57 per cent of Americans believe that humans and other living things have evolved over time, according to a poll conducted this September by the Public Religion Research Institute, only half (51 per cent) of those polled knew that there is also a broad scientific consensus supporting evolution. Over a quarter of respondents erroneously believed that scientists are divided on the question, and a mind-boggling 15 per cent of those polled thought that most scientists do not endorse evolution as a valid scientific principle. Seizing on this confusion, creationists have, in recent years, ramped up their propaganda efforts to gain and solidify public support for their cause.

As the modern creationist movement has become more organised and gained more exposure, it has also become better financed, allowing for grander and wider-reaching propaganda efforts. Answers in Genesis (AIG) and the Discovery Institute, two leading creationist groups, in particular, have successfully marshalled resources to mount multi-million-dollar projects intended to bring the public into the anti-evolution fold. In 2007, AIG,

a young-earth creationist group that believes the earth and humans were created only 6,000 years ago, opened the Creation Museum in Kentucky. The state-of-the-art 70,000 square foot museum reportedly was funded with more than \$25m in donations. It was conceived as a destination attraction, and features a number of exhibits that promote the biblical account of creationism and creation-science and deny the validity of evolution. Workshops offered by the museum, for example, declare that evolution is 'bad science'. Exhibits explain that while 'dinosaurs were created on the same day as humans and lived with us', most 'were destroyed in the worldwide Flood that God sent to judge the earth, but two of each kind survived to inspire the dragon legends that permeate most cultures of the world'. By 2010, AIG claimed that over one million people had visited the museum and, based on its success, it is now planning to build (taking advantage of millions of dollars in tax breaks) a Noah's Ark theme park elsewhere in Kentucky. The Ark Park will likely echo the themes of the Creation Museum when it comes to evolution.

In another high-profile propaganda campaign, creationists managed several years ago to produce and distribute a major motion picture documentary, *Expelled: No Intelligence Allowed*. The film, which cost over \$3m to make, was released nationally and purported to uncover a broad conspiracy in the scientific community to ignore evidence contradicting evolution and silence those trying to bring to light the evidence. The film's rampant misinformation and outright lies are well-documented by the National Center for Science Education at its special website 'Expelled Exposed'. In the film, host Ben Stein, an actor and former speechwriter for Richard Nixon, also claims that Darwin and evolution supporters are to blame for eugenics, Nazism and the Holocaust. The fact that producers chose Stein to narrate and host a film that claims to stand against the persecution of good teachers is, in itself, ironic and an affront to actual schoolteachers: Stein's main claim to fame is his small role playing one of the worst teachers ever depicted on film in *Ferris Bueller's Day Off*. (In the realm of 'celebrity' spokespeople for the creationist movement, Stein is the top dog – though former television star Kirk Cameron, who starred in the 80s sitcom *Growing Pains*, might be poised to overtake him. Cameron has spoken widely against evolution education and even created and marketed his own board game, 'Intelligent Design vs. Evolution'.) The film labels scientists who recognise the validity of evolution as Nazis, revealing its true nature as a piece of anti-science propaganda.

If creationists' early strikes against evolution education were, based on their direct and obvious attack strategies, akin to conventional warfare,

their latest tactics are more analogous to those of guerilla fighters. After trying for decades, with little success, to enact formal legal change that would censor the teaching of evolution and instead permit creationist beliefs to be advanced in public schools, creationists appear to be embracing another approach that targets teachers more indirectly. By spreading misinformation and propaganda about evolution and inflaming the public debate over it, they have managed to create a cultural environment in which some teachers feel inspired to violate the law on their own by teaching creation, and many others – cognisant of the potential backlash from parents and students who might otherwise, however wrongly, perceive the teachers as challenging or denigrating their religious beliefs by endorsing evolution as a proven scientific concept – feel pressured to self-censor their science lessons.

Even the current legal strategies (relating to evolution's so-called 'strengths and weaknesses') avoid any direct attacks on evolution or direct advocacy of creationism or intelligent design. Instead, creationists now seek to exploit teachers' instincts to avoid controversy by giving them legal cover to present information that will placate those who dispute evolution on religious grounds.

The fallout from this decades-long campaign to dismantle evolution education and re-insert religious ideology into public school science classes is substantial and disturbing. Nearly three-quarters of students are receiving an inadequate foundation in science education. As creationists ratchet up and hone their current strategies targeted at teachers, these figures may grow worse. Consequently, millions of students are and will continue to be ill-prepared for the rigours of higher education and less likely to pursue careers in scientific fields. Much like the mid-20th century, when we discovered that the country was falling behind the world in technology and science, the US continues to lag far behind other nations in science education: a 2009 study by the Organisation for Economic Co-operation and Development rated US science students in the bottom ten of the top 30 industrialised nations.

Creationists' treatment of evolution as opinion, rather than scientific fact, is also likely to encourage devaluing scientific discovery in other contexts as well. Indeed, global warming deniers have already hitched their wagons to the evolution 'debate' by casting global warming as another 'scientific controversy' about which science curricula should remain circumspect.

In addition to the serious harm caused to science education, the use of public schools to advance religious ideology infringes the constitutional rights of every student to be free from government-imposed religious indoctrination. It also usurps the rights of parents, not the government, to control

the religious upbringing of their children. And it creates religious dissension that undermines a core function of the public school system, which, as one Supreme Court justice has observed, was '[d]esigned to serve as perhaps the most powerful agency for promoting cohesion among a heterogeneous democratic people' and must, therefore, be kept 'scrupulously free from entanglement in the strife of [religious] sects'.

Though the courts and legislatures have traditionally marked the front-line for combatting the creationist movement, the battlelines are shifting. Make no mistake, it remains important to defend those judicial victories and to ensure that no ground is yielded in the legal sphere. But to truly protect science education in US public schools, we also must look beyond the courts and devise strategies to ease the pressure on science teachers to self-censor or otherwise compromise their instruction in evolution – starting with a plan to open the public's eyes to the overwhelming evidence and support for evolution in the scientific community, the primacy of evolution as a fundamental principle of biology and science, and the importance of sound science to our individual and common welfare. □

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