

Comment

It is alive

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They're at it again. Armed with another new idea from the Discovery Institute, that bastion of ignorance, right-wing political ideology, and pseudo-scientific claptrap, the creationist movement has mounted yet another assault on science. This time it comes in two flavors: propaganda and legislative.

The propaganda is in the form of a poorly written, badly acted movie produced by Ben Stein, an attorney and entertainment figure who once served as a speechwriter for US Presidents Gerald Ford and Richard Nixon. As if working for Nixon didn't do enough to demonstrate his faulty judgment, he has become an ardent critic of evolution and an advocate for 'intelligent design', which is creationism poorly disguised as 'science'. He co-wrote and stars in the film *Expelled: No Intelligence Allowed*, which attempts to link evolution to the eugenics movement in Nazi Germany and to the Holocaust, and portrays advocates of intelligent design as champions of academic freedom and victims of discrimination by the scientific community. The famous evolutionary biologist and atheist Richard Dawkins has a spirited attack on the film on his website [<http://richarddawkins.net>], and there's also a lively critique from the National Center for Science Education [<http://www.expelledexposed.com>].

Fortunately, the film is sinking faster than the *Lusitania*. As far as I can discover, it has grossed less than US\$8 million in ticket sales to date, far less than its cost, and is playing to virtually empty houses in the few theaters that are still showing it. Whether this is because people recognize its ideas as rubbish or because it is simply a bad movie, I don't know. So we can probably ignore it, as it so richly deserves. But the legislative attack is much more serious.

On 11 June 2008, the Louisiana House of Representatives voted 94:3 in favor of a bill that would promote 'critical thinking' by students on topics such as evolution, the origins of life, global warming, and human cloning. The Louisiana

Senate already passed a similar bill, Senate Bill 733, by a vote of 35:0, but an amendment adopted by the House, which would allow the state Board of Elementary and Secondary Education to prohibit supplemental materials it deems inappropriate, means that the Senate must pass the bill again. If they do, and this seems a certainty, then the bill will be sent to Louisiana governor Bobby Jindal, at 36 the youngest governor in the United States and the first Indian-American to serve as the head of a state government. A former Hindu who converted to Catholicism in high school, Jindal attended Oxford University on a Rhodes Scholarship. Jindal was a biology major at Brown University, so he should understand the science at stake here, but he opposes stem-cell research and has publicly supported the teaching of 'intelligent design' in public schools. He has not stated whether or not he will sign Bill 733. A fascinating subtext to this story is that Jindal is reportedly under consideration by Republican presidential nominee John McCain as a possible vice-presidential nominee.

The bill is cleverly worded: it states in section 1C that it "shall not be construed to promote any religious doctrine, promote discrimination for or against a particular set of religious beliefs, or promote discrimination for or against religion or nonreligion." In an interview with the conservative newspaper *The Washington Times* (12 June 2008), Jason Stern, vice-president of the Louisiana Family Forum, a Christian right-wing lobby group, insisted "It's not about a certain viewpoint. It's allowing [teachers] to teach the controversy."

Let me say this as clearly as possible, so there can be no mistake about what I mean: there is no controversy. Just because a few misguided so-called scientists question the validity of the concept of evolution doesn't mean there is a controversy. There are still some people who believe the Earth is flat (there's even a 'Flat Earth Society'), but that doesn't mean that a grade-school science teacher should teach his or her students that the Earth might be flat. The

fact that some people believe nonsense does not give that nonsense scientific validity. A challenge to existing scientific principles must be based on evidence, not on belief, and there isn't a shred of evidence to support either creationism or intelligent design. Those ideas belong in a religion or philosophy class, not in a science class.

By the way, speaking of religion class, if we accept the creationists' own rationale for this bill, then shouldn't right-wing fundamentalist Christian schools be forced to 'teach the controversy' about religion? It's a much more controversial subject than science. Shouldn't their students be forced to consider the possibility that there is no God, or that the Muslim faith, or the Hindu faith, or the Jewish faith might be the true one? Or that there are so many different translations and versions of the Bible that there is no way of knowing which one is the 'word of God'? You can see how quickly their argument breaks down.

What about the academic freedom argument? If someone wants to teach creationism in a science class, shouldn't they have the right to do so? Certainly - if they want to get fired. Because if they do that they deserve to get fired. It has nothing to do with academic freedom; it's about basic competence. Consider, for example, a science teacher who taught that the Sun revolves around the Earth. Even the intelligent-design advocates would probably have to admit that such a science teacher was incompetent and ought to be dismissed. That teacher might counter with a claim that his or her academic freedom was being infringed, but no court would uphold it, any more than a court would uphold a similar claim from a history teacher who taught that the Allies lost World War 2 or that Napoleon Bonaparte was emperor of Japan. Science, and history, may welcome speculation, but the speculation must be based on facts, and when it isn't, then it doesn't belong in that subject. Any 'science' teacher who teaches that the Earth might have been created about 6,000 years ago and that all the material evidence that it's billions of years old is controversial is simply incompetent. If the state of Louisiana wants its children taught by such people then they deserve the kind of workforce and citizenry they are going to get.

It's worth pointing out that in 1987, in the case of *Edwards versus Aguillard*, the US Supreme Court ruled as unconstitutional the idea of equal time for "creation science" and evolution in biology classes. That precedent will almost certainly be used as the basis for a constitutional challenge to the Louisiana law if it passes. Also, in the state of Pennsylvania, the '*Kitzmiller versus Dover*' case in 2005 put to rest the idea of intelligent design as an alternative to evolution being taught in biology classes - the judge there, in a brilliantly reasoned opinion, demonstrated that intelligent design was just creationism by another name. Although not a Supreme Court case, this decision was strong enough to cause creation science advocates to switch tactics to

arguments about academic freedom, the focus of the current legislation at issue in Louisiana.

Lest you think this is merely some Bible Belt aberration, let me assure you that the creationists are marshalling this argument in other states as well. In Michigan, Senate Bill 1361, introduced in the Michigan Senate on 3 June 2008, and referred to the Senate Committee on Education, is yet another 'academic freedom' bill aimed squarely at the teaching of evolution. Identical to Michigan House Bill 6027, which is still in the House Committee on Education, Senate Bill 1361 would, if enacted, require state and local administrators "to create an environment within public elementary and secondary schools that encourages pupils to explore scientific questions, learn about scientific evidence, develop critical thinking skills, and respond appropriately and respectfully to differences of opinion about controversial issues" and "to assist teachers to find more effective ways to present the science curriculum in instances where that curriculum addresses scientific controversies" by allowing them "to help pupils understand, analyze, critique, and review in an objective manner the scientific strengths and scientific weaknesses of existing scientific theories pertinent to the course being taught." And in Texas (why is it not a shock that the state that gave us George W Bush would show up here), the Texas State Board of Education is again considering mandating a science curriculum that teaches the "strengths and weaknesses" of evolution. On 7 June 2008, the *Houston Chronicle* wrote that "strengths and weaknesses" language is "a 'teach the controversy' approach, whereby religion is propounded under the guise of scientific inquiry". The editorial went on to say: "What students really need is to be able to study science from materials that have not been hijacked by creationists whose personal agenda includes muddying the science curriculum. Creationism is not a 'system of science'."

As scientists, we need to protest with our feet and our wallets. I am about to become the president of the American Society for Biochemistry and Molecular Biology, a scientific society with about 12,000 members. Our 2009 annual meeting is scheduled to take place in New Orleans. If Bill 733 becomes law in Louisiana, it will be too late to move the meeting to another state. But we need to see to it that no future meeting of our society will take place in Louisiana as long as that law stands, nor should we hold it in any other state (are you listening, Michigan and Texas?) that passes a similar law. I call upon the presidents of the American Chemical Society, the American Association of Immunologists, the Society for Neuroscience, and all the other scientific societies in the US and around the world to join me in this action and make clear to the state legislators in Louisiana, the governor of the state, and the mayor and business bureau of New Orleans that this will be the consequence. You can do the same. Governor Jindal can be reached through his website [<http://www.bobbyjindal.com>] and Ray Nagin, mayor of New

Orleans, can be reached through the Mayor's office [<http://www.cityofno.com/Portals/Portal35/portal.aspx>].

In its ability to rise again just when we think we've got it licked, creationism is like Frankenstein's monster. "Come see, villagers! It is alive!" We'll never be rid of it by being silent and doing nothing, so one important thing is to force governments that ally themselves with this monster to pay for their folly by denying them our business. In addition, we must all arm ourselves with the one weapon we have that, in the end, the monster cannot overcome: the truth. All of us need to familiarize ourselves with the facts of evolution so that we can mount a spirited defense against the forces of ignorance and the charlatans who would exploit human insecurity and need for certainty.

Carl Sagan memorably called science "a candle in the dark". Well, the darkness is always around us, closer than you think sometimes. Yes, it is alive. Creationism's alive because some of our fellow men and women keep it alive. In the dark.