



# REPORTS

OF  
THE  
NATIONAL CENTER FOR SCIENCE EDUCATION

DEFENDING THE TEACHING OF EVOLUTION IN THE PUBLIC SCHOOLS

Volume 29, Number 2

MAR-APR, 2009

CONTINUES NCSE REPORTS & CREATION/EVOLUTION



Roundtable:  
Bringing  
Evolution to  
the Public

Chipping away  
at Evolution  
Education in  
NC, TX, & LA

The People  
& Places of  
Evolution: The  
Temple of Serapis

Books Section:  
Science & Religion:  
Conflict, Concord,  
Accommodation?

# CONTENTS



## NEWS

- 4** Creationism in Brunswick County  
*Anton Mates*  
A school district in southern North Carolina considers "equal time" proposals.
- 5** Implementing Louisiana's Anti-Evolution Law  
*Joshua Rosenau*  
The Louisiana Science Education Act is law, and now it must be implemented.
- 8** A Furor over Creationism at the Royal Society  
*Glenn Branch*  
A science educator was embroiled in controversy over remarks about creationism in the classroom.
- 9** The Latest on *Expelled*  
*Eugenie C Scott*  
The movie is getting publicity again, but as one of the worst films of 2008.
- 10** Victory over "Weaknesses" in Texas  
*Glenn Branch*  
Language about "strengths and weaknesses" of "controversial" scientific theories was dropped from the state standards. But other changes raise concerns.
- 14** Updates  
News from Alabama, Florida, Iowa, Louisiana, Massachusetts, Mississippi, Missouri, New Mexico, Oklahoma, Canada, and the Netherlands.

## NCSE NEWS

- 21** News from the Membership  
What our members are doing to support evolution and oppose pseudoscience wherever the need arises.

## MEMBERS' PAGES

- 23** Revisiting the Creation/Evolution Continuum  
A reminder that there is a range of perspectives.
- 24** Books: Science and Religion Redux  
These books explore the relationship between modern science and religious faith.
- 26** NCSE *On the Road*  
Check the calendar here for NCSE speakers.

## SPECIAL FEATURE

### MEMBERS' ROUNDTABLE

- 30** Winning Their Hearts and Minds: Who Should Speak for Evolution?  
*Daryl P Domning*  
Domning suggests that scientists who profess religious faith would help more people to accept evolution.



- 33** Response to "Winning Their Hearts and Minds"  
*Sheldon F Gottlieb*  
Gottlieb acknowledges the tactical advantage in Domning's proposal, but worries that this approach may weaken scientific literacy in the longer run.
- 34** Communicating Evolutionary Science to a Religious Public  
*Keith B Miller*  
It is important — for both scientists and the general public — to recognize how science interacts with the values and beliefs of broader culture, and that includes religious belief.
- 35** Keeping Evolution Education in Perspective: A Response to Daryl Domning  
*Erik B Pietrowicz*  
It is the public school teacher who is at the forefront of this issue. How might Domning's approach play out in the classroom?
- 36** Rejoinder to Comments  
*Daryl P Domning*  
Reflections on responses at the roundtable.

## SPECIAL FEATURE

### PEOPLE & PLACES

- 38** The Temple of Serapis  
*Randy Moore*  
Charles Lyell correctly inferred past geologic processes by observation at this famous site on a peninsula that juts into the Mediterranean just west of Naples.

## BOOK REVIEWS

- 39** Thank God for Evolution! — A Response to a RNCSE Review  
*Michael Dowd*  
The author discusses the aims of the book.
- 40** *Saving Darwin: How to Be a Christian and Believe in Evolution*  
by Karl W Giberson  
*Reviewed by Denis O Lamoureux*
- 42** *Render Unto Darwin: Philosophical Aspects of the Christian Right's Crusade against Science*  
by James H Fetzer  
*Reviewed by Keith M Parsons*
- 44** *Charles Darwin*  
by Michael Ruse  
*Reviewed by Doren A Recker*
- 45** *Back to Darwin: A Richer Account of Evolution*  
edited by John B Cobb Jr  
*Reviewed by Timothy Shanahan*
- 46** *Evolutionary Creation: A Christian Approach to Evolution*  
by Denis O Lamoureux  
*Reviewed by Stephen J Godfrey*

VOLUME 29, NR 2, MAR-APR 2009  
ISSN 1064-2358

©2009 by the National Center for Science Education, Inc, a not-for-profit 501(c)(3) organization under US law. *Reports of the National Center for Science Education* is published by NCSE to promote the understanding of evolutionary science.

## EDITOR

Andrew J Petto  
Department of Biological Sciences  
University of Wisconsin, Milwaukee  
PO Box 413  
Milwaukee WI 53201-0413  
(414) 229-6784 fax: (414) 229-3926  
e-mail: editor@ncseweb.org

## EDITORIAL ASSISTANT

LaKisha Barrett

## BOOK REVIEWS EDITOR

Glenn Branch

## EDITORIAL BOARD

### Contributing Editor

John R Cole

### Associate Editors

#### Education

Brian Alters, McGill U

#### Cell and Molecular Biology

Michael Buratovich, Spring Arbor U

#### Educational Technology

Leslie Chan, U Toronto

#### Physics and Astronomy

Taner Edis, Truman State U

#### Geosciences

John W Geissman, U New Mexico

#### Mathematics and Statistics

Rob Kusner, UMass - Amherst

#### Paleontology and Evolutionary Theory

Kevin Padian, U California - Berkeley

#### Philosophy of Science

Barbara Forrest, Southeastern Louisiana U

Glenn Branch, *Production & Circulation*

Debra Turner, *Design*

Eugenie C Scott, *Publisher*

National Center for Science Education

PO Box 9477

Berkeley CA 94709-0477

(510) 601-7203

fax: (510) 601-7204

e-mail: ncse@ncseweb.org

http://www.ncseweb.org

Views expressed are those of their authors and do not necessarily reflect the views of NCSE.

RNCSE is published 6 times a year.

Address editorial correspondence to the editor. Style guidelines can be found at <<http://ncseweb.org/media/authors-information>>. Write to the publisher regarding address changes, missing issues, purchases of back issues, reprint rights, and related issues.

Cover: A stained glass window in the Thomas Jefferson Building of the Library of Congress, with statues of Religion and Science on either side.

Other artwork ©Ray Troll, 1997

For more information on Ray's work explore his website at <[www.trollart.com](http://www.trollart.com)>.



In the promotion of evolutionary science — whether in the classroom or in public policy — we are all aware of the “elephant in the room”. Despite carefully crafted catchphrases and euphemisms — “academic freedom”, “strengths and weaknesses”, “critical thinking”, and so on — the objections to evolution are fundamentally religious in nature. This is why RNCSE often carries articles, features, book reviews, and other items that explore religious thinking as it relates to modern science, including evolution.

NCSE, of course, has a clear policy of religious neutrality, but at various events around the country, I am often struck by comments from the general public that perceive NCSE as antireligious, primarily because we promote and defend evolution so relentlessly. In fact, NCSE does not oppose religious belief *per se*. We are grateful that many religious organizations do accept and actively support good science education — including evolution. What we oppose is a religious idea pretending to be science and policies that attempt to substitute religious doctrine for scientific knowledge in the public school curriculum.

Our lead article by NCSE member Daryl Domning reflects the complex landscape of promoting evolution to a public that is committed to religious or spiritual practices. To eliminate the perception that science — particularly evolution — requires atheism, he suggests that scientists who *do* profess a religious faith be more prominent in public outreach. Domning reasons that a defense of evolution by a scientist who is also a person of faith will defuse — or at least refocus — the concerns of the public that accepting evolution means rejecting their faith traditions and beliefs.

When Domning submitted this essay, he agreed to our sending it out to various NCSE members for comments and critiques. We include three of those responses in this issue from Sheldon Gottlieb, Keith Miller, and Erik Pietrowicz.

Randy Moore takes us to another exotic place in his regular column. This time we travel to the Mediterranean coast of Italy, just west of Naples, to the Temple of Serapis, where Lyell was able

to draw conclusions about changing sea levels and volcanic deposits from observing the marble columns that made up the temple ruins.

## IN THE NEWS

Texas is still in the throes of revising science education standards. Although the “strengths and weaknesses” language was removed, new language to weaken evolution education was successfully introduced. And in Louisiana, the focus is now shifted to draft policies for implementing the new science education act. Legislators are aware that they cannot promote sectarian religious doctrine, so there is language in the law that prohibits introducing religion into science classes — except that plenty of the alternatives that schools might introduce would do exactly that. It is clear that the intent of the law conflicts with the letter of the law, and this invites an implementational nightmare. Joshua Rosenau reports.

Anton Mates uncovered a most interesting case of anti-evolutionism in North Carolina — a throwback to the 1980s. A school superintendent and her board were planning a policy that resurrected the old “equal time” laws struck down 20 years ago. At least this school board is being above board in expressing its desire to teach biblical creationism and is not hiding its intent under neutral-sounding euphemisms.

## BOOK REVIEWS

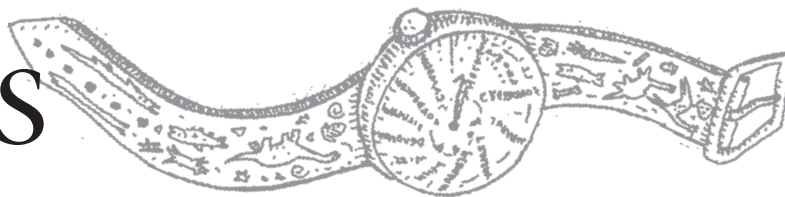
In keeping with the theme of this issue, Michael Dowd, author of *Thank God for Evolution!*, responds to an earlier review by Clay Farris Naff. Dowd wants to clarify some of the ideas in his book, but also to make it clear that his audience is rooted in communities of faith who may feel at odds with modern science.

Our reviewers focus on books that explore various interactions between faith and science. Some look explicitly at doctrine or theology. Others explore more general issues, such as ethics, morality, and finding a purpose in life.

Remember to check out our centerfold pages, letting you know how to order recommended books and support NCSE financially with every purchase.

RNCSE 29 (2) was printed in May 2009.





## Creationism in Brunswick County

Anton Mates

Brunswick County is a largely rural county of about 75 000 people in the southern tip of North Carolina, but it drew national attention in the fall of 2008 when its school board considered adding creationism to the science curriculum. (For a brief report, see *RNCSE* 2008 Sep-Dec; 28 [5-6]: 4-8.)

According to the Wilmington *Star-News* (2008 Sep 16), the controversy began at the September 16, 2008, board meeting, when Joel Fanti, a chemical engineer and local parent, condemned the teaching of evolution as "fact" rather than "theory". Fanti also made a curious argument: "I wasn't here 2 million years ago ... If evolution is so slow, why don't we see anything evolving now?" He volunteered to teach creationism himself, to audience applause.

Board chair Shirley Babson responded that evolution was a required subject, although she personally rejected it. She was uncertain whether creationism could legally be added to the science curriculum, but said, "if we can do it, I think we ought to do it." All other board members present also voiced their support for teaching creationism, and superintendent Katie McGee agreed to research the question of its legality. The board's attorney suggested that it might be possible to add creationism to the curriculum as long as evolution was still taught.

The board's receptiveness to the idea of explicitly mandating creationism may seem surprising to longtime observers of the anti-evolutionist movement. Since 1987's *Edwards v Aguillard* decision pro-

hibited exactly this sort of policy as unconstitutional, most creationism activists have chosen more indirect tactics, such as "intelligent design" or — since *Kitzmiller v Dover* — "teaching the controversy" or "strengths and weaknesses".

But several members of Brunswick County's school board — in particular Babson, Jimmy Hobbs, and Ray Gilbert — have consistently supported the promotion of particular religious viewpoints on school grounds. For instance, in 2006, Hobbs, Babson, and Gilbert proposed to let Gideons International distribute Bibles in county high schools. (*State Port Pilot* 2006 March 21) When it was pointed out that Wiccans, Pastafarians, and other religious groups would also have to be permitted to distribute *their* literature, the proposition was tabled indefinitely (*Star-News* 2006 May 5).

The next year, Hobbs and Babson pushed for more parental control over the contents of school libraries, expressing concern that *Harry Potter's* inclusion in school libraries promoted Wiccanism and would lead children to practice witchcraft and animal sacrifice (*Star-News* 2007 Sep 21). It does not appear that they were successful in changing library policy.

Presumably Hobbs was referring to this history of failed attempts to promote particular religious viewpoints in the Brunswick County schools when he said at the September meeting, "It's really a disgrace for the state school board to impose evolution on our students without teaching creationism. The law says we can't have Bibles in schools, but we can have evolution, of the atheists" (*Star-News* 2008 Sep 16).

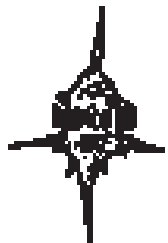
### REACTIONS TO THE PROPOSAL

When state education officials were interviewed in the days following

the meeting, they were clear on the law. North Carolina Superintendent of Public Instruction June Atkinson said that schools are not allowed to teach creationism as science, and that those that did so are liable to be sued. Edd Dunlap and Tracey Greggs, the chiefs of the science and social studies sections in the state department of public instruction, agreed. Referencing both *Edwards v Aguillard* and *Kitzmiller v Dover*, Dunlap explained that creationism and "intelligent design" could be covered in an elective course in religion or philosophy, but could not be taught in science or any other required course, nor could it be taught as fact. Greggs added that creationism could also be included in history class, but would have to be presented alongside other religious perspectives and not specifically promoted (*Star-News* 2008 Sep 29).

Opinion within the local community was predictably divided. Pro-evolution sentiment was strong; concerned citizens contacted the district, wrote letters to local newspapers, and contacted both NCSE and the Evolution Learning Community at the University of North Carolina's campus in nearby Wilmington, where by coincidence, Richard Leakey was giving a talk on human evolution. Phillip Johnson arrived a week later, at the invitation of the InterVarsity Christian Fellowship, to discuss "intelligent design".

Local church officials, such as Mary Hart and Father Hector La Chappelle of St Brendan the Navigator Roman Catholic Church in Shallotte, vocally opposed the board's plans (*Star-News* 2008 Sep 22), while other religious figures supported it just as staunchly. At a forum a month before the November 2008 election, school board candidates were quizzed on their opinions on the issue. The district received letters from as far away as the state of Washington, according to Babson, and the pro-



posals was discussed on numerous national blogs. The high level of nationwide interest in the affair is due largely to the diligent coverage of the *Star-News* in nearby Wilmington. One of its reporters, Ana Ribeiro, wrote half a dozen articles on the board's proposal, the opinions of board members and candidates, reactions from the community, and the relevant educational laws and policies of North Carolina. (The latest of these, from November 6, 2008, and containing links to the newspaper's previous coverage, is available on-line at <<http://www.starnewsonline.com/article/20081106/ARTICLES/811060231>>.)

## RESOLUTION

Perhaps concerned by the attention, the board canceled its monthly meeting for October 2008. Around that time, Babson noted to reporters that, given the critical response and legal advice the board had received, it would probably not try to teach creationism after all — although, she indicated, she would still like to see that happen someday (*Star-News* 2008 Sep 29).

The next meeting took place on November 6, 2008, shortly after the election. (Pro-creationist Ray Gilbert, incidentally, was unseated in that election by Bud Thorsen, a challenger who was opposed to teaching creationism in science class.) Addressing the board, Fanti said he recognized that creationism could not be added to the science curriculum and suggested that it be taught in a social studies class such as world history instead, alongside other religious belief systems such as the Indian and the Egyptian. At the same time, he argued, the “strengths and weaknesses” of evolutionary theory should be discussed in science class. The “weaknesses” Fanti raised were standard creationist fare; he invoked the standard microevolution/macroevolution distinction and also asked, “how does evolution propose that mankind came into being when the [sic] particles to human beings has never been observed nor can it be proven?” (*North Brunswick Pilot* 2008 Nov 12).

The board was unwilling to comment on the issue this time around; the standing members said they

needed more information before discussing it again. Shirley Babson requested a written copy of Fanti's suggestions, but also said after the meeting that she knew of no curricula that challenged evolution; however, she did not rule out the possibility of teaching about creationism in social science classes.

On the whole, recent developments in Brunswick have been positive. The board's enthusiasm for teaching creationism has apparently cooled significantly; to judge by their previous activities, tabling discussion of an issue “until more information is available” is generally a prelude to discarding it entirely. With one of the board's strongest supporters of creationism on his way out, and a strong pro-science message provided by local citizens, state officials, and the board's own legal advisors, it is to be hoped that good science education in Brunswick will no longer be threatened by the very body in charge of ensuring its provision.

## AUTHOR'S ADDRESS

Anton Mates  
NCSE  
PO Box 9477  
Berkeley CA 94709-0477  
[mates@ncseweb.org](mailto:mates@ncseweb.org)

## Implementing Louisiana's Anti-Evolution Law

Joshua Rosenau

On January 15, 2009, Louisiana's Board of Elementary and Secondary Education adopted a policy about what types of supplementary classroom materials will, and will not, be allowable under the Louisiana Science Education Act. While the policy echoes the LSEA's requirement that such materials “not promote any religious doctrine, promote discrimination for or against a particular set of religious beliefs, or promote discrimination for or against religion or nonreligion,” a provision that “materials that teach creationism or intelligent design or that advance the religious belief

Joshua Rosenau is Public Information Project Director at NCSE.

that a supernatural being created humankind shall be prohibited for use in science class” was deleted, according to a report from the Associated Press (2009 Jan 15).

Enacted in June 2008 over the protests of scientists and educators across the state and around the country, the LSEA (enacted as Louisiana Revised Statutes 17:285.1) provides:

A teacher shall teach the material presented in the standard textbook supplied by the school system and thereafter may use supplemental textbooks and other instructional materials to help students understand, analyze, critique, and review scientific theories in an objective manner, as permitted by the city, parish, or other local public school board unless otherwise prohibited by the State Board of Elementary and Secondary Education.

The new policy governs the way in which BESE will consider such supplementary material.

It was clear from the outset that evolution was in the LSEA's sights. The original draft of the law specifically identified “biological evolution, the chemical origins of life, global warming, and human cloning” as controversial subjects, and called on state and local education administrators to “endeavor to assist teachers to find more effective ways to present the science curriculum where it addresses scientific controversies.” In its final version, these topics are no longer described as controversial, but they are still specifically mentioned. And the Baton Rouge *Advocate* (2008 Apr 19) editorially recognized, “it seems clear that the supporters of this legislation are seeking a way to get creationism ... into science classrooms.” (For background, see *RNCSE* 2008 Mar/Apr; 28 [2]: 8–11; 2008 Jul/Aug; 28 [4]: 4–10.)

A committee of veteran educators and scientists assembled by the state department of education began drafting the policy to implement the LSEA in fall 2008 which was submitted to the BESE's



# LETTER TO THE LOUISIANA BOARD OF ELEMENTARY AND SECONDARY EDUCATION

January 12, 2009

**Dear ladies and gentlemen of the Board of Elementary and Secondary Education, and especially the Student/School Performance Support Committee:**

In my letter to you of January 6, 2009, I encouraged you to heed the excellent recommendations of the Louisiana Science Education Act Advisory Committee regarding the implementation of Act 473, the Louisiana Science Education Act. The December 2, 2008, guidelines for amending Section 2304 of Bulletin 741, the *Louisiana Handbook for School Administrators*, as required by Act 473, reflected these recommendations. Unfortunately, the revised §2304 guidelines that will be proposed to the Student/School Performance Support Committee on January 13, 2009, have been altered in ways that are detrimental to the education of Louisiana students.

I strongly encourage you to restore the wording of the original §2304, which was considered but deferred at the December 2, 2008 S/SPS Committee meeting. Changes introduced since that first proposal was made create problems for the implementation of Act 473 and make it more likely that teachers and administrators will not receive the clear guidance that they need in order to avoid infringing their students' religious freedoms. These changes will also make it more likely that science will not be taught accurately.

First, I encourage you to restore a sentence deleted from Part C of the Dec. 2 guidelines: "Religious beliefs shall not be advanced under the guise of encouraging critical thinking." This sentence reiterates a statement from Superintendent Pastorek's letter of August 27, 2008: "Religious theories shall not be advanced under the guise of encouraging critical thinking." Restoring this sentence to Part C of the January 13 version of the guidelines will provide unambiguous guidance to teachers and school administrators as to their legal responsibilities regarding supplementary materials. It is an important statement that will help teachers and administrators avoid costly legal challenges. In addition to the financial cost, such challenges would also divert time and attention away from the essential responsibility of educating children and would aggravate the harm that Act 473 has already done to Louisiana's image in the eyes of our fellow Americans.

Second, I direct your attention to the last sentence of Part D. 4. d.: "Evaluations of supplementary materials shall be made without regard to the religious or nonreligious beliefs and affiliations of the authors of supplementary materials." This sentence contains confusing and inaccurate directives regarding the evaluation of supplementary materials. Students must understand that the source of information *is* important, and teachers must instruct them that the source is related to the credibility and reliability of information. To determine quality, acceptability, and bias, scientists and teachers customarily and quite appropriately examine the source of instructional material. There is a difference between a document that derives from a respected scientific organization such as the American Association for the Advancement of Science and an article found on a website promoting the idea, for example, that the moon landing was a hoax. Knowing whether an article is published in a respected publication such as *Scientific American* or whether it comes from an advocacy organization does indeed matter.

The last sentence of Part D. 4. d. also contradicts Section 113 of the *Louisiana Content Standards*, Benchmarks, and Grade Level Expectations for Science, which requires in sections 3 and 4 that Students examine the resources for readability, **currency, usefulness, and bias**.... [S]tudents must examine and evaluate the data in order to utilize the information retrieved. Students must interact with the information by categorizing, analyzing, evaluating, and **comparing for bias, inadequacies**, omissions, errors, and value judgments. ... (emphasis added) (<<http://www.doa.louisiana.gov/osr/lac/28v123/28v123.pdf>>.)

Knowing the beliefs and affiliations of the authors of supplementary instructional materials is critical to making such an assessment as required by the *Louisiana Content Standards*. The last sentence in Part D. 4. d of the January 13, 2009, guidelines would prohibit evaluating these materials on the basis of this essential information.

Third and finally, I encourage you to delete Parts D. 2 and D. 3, which present an unclear, ill-conceived, and onerous procedure by which the Department of Education will consider citizen challenges to supplementary instructional materials. The instructions are vague and confusing, and they unnecessarily complicate what should be a straightforward decision based on the professional expertise of LDoE staff. In considering citizen input concerning supplementary materials, the process should not involve a "meeting" which requires citizens to travel and incur expenses — unlike the current procedure for citizen input on textbooks. Furthermore, in the absence of any clear time-line, it is entirely likely that inappropriate materials would remain in classrooms indefinitely. A better procedure would be for LDoE to identify inappropriate supplemental materials to BESE, which would then circulate such a list to administrators and teachers. Citizens could then challenge the materials prohibited by BESE, but such materials would not first have to be purchased, introduced into classrooms to instruct children, and then removed after taxpayer dollars and time have been wasted.

Nothing is more vital to both the short-term and long-term quality of life in Louisiana than the education of the state's children. I have told my own children many times that education is life, because without it, no decent life is possible for anyone. Educating *other* people's children is a sacred trust which, as an educator myself, I do my best every day to honor. I am asking you to do the same by restoring the integrity of the guidelines under which the Louisiana Science Education Act will be administered. If Louisiana children must be educated under this misguided law, then all of us have a moral responsibility to prevent their being injured by it.

Sincerely yours,  
Barbara Forrest, PhD

[For identification purposes only:]

Co-founder, Louisiana Coalition for Science (<http://lasciencecoalition.org>);

Member, Board of Directors, National Center for Science Education, Oakland, CA (<http://www.ncseweb.org>);

Member, Board of Trustees, Americans United for Separation of Church and State, Washington, DC (<http://www.au.org>)



Student/School Performance Support Committee on December 2, 2008. The Associated Press (2009 Jan 8) reported, "Proposed for discussion at the December meeting were requirements that any information in the supplemental material be 'supported by empirical evidence.' The proposed language also said religious beliefs 'shall not be advanced under the guise of encouraging critical thinking' and that materials 'that teach creationism or intelligent design or that advance the religious belief that a supernatural being created humankind shall be prohibited in science classes.'"

Barbara Forrest, a professor of philosophy at Southeastern Louisiana University, coauthor with Paul R. Gross of *Creationism's Trojan Horse* (revised edition, New York: Oxford University Press, 2007), and a member of NCSE's board of directors, praised the December version of the policy for ensuring that religion would not be taught in the public schools. But Gene Mills of the Louisiana Family Forum, a religious right organization that vociferously supported the LSEA, was unhappy with it, telling the Associated Press, "I would think that it left religious neutrality and took a tone of religious hostility. Or at least it could be interpreted by some to have done that." Action on the policy was not taken immediately, but instead deferred until January 2009.

On January 8, 2009, a revised draft was posted in advance of the committee's January 13 meeting. The provision that "religious beliefs shall not be advanced under the guise of encouraging critical thinking" was removed, and a provision forbidding consideration of the "religious or non-religious beliefs and affiliations" of the authors of supplementary material was added. The procedure for challenging supplementary material also became more complicated. Complaints would need to cite the problems with the material, school districts would be notified of challenges, and a hearing would need to be held at which the district, the complainant, and "any interested parties" would have "adequate time to present their arguments and information and to offer rebuttals."

Forrest decried these revisions in a January 12, 2009, letter to the

BESE, objecting that the policy was "altered in ways that are detrimental to the education of Louisiana students" (see p. 6). She called for the provision regarding religious beliefs under the guise of critical thinking to be restored, explained that "[t]o determine quality, acceptability, and bias, scientists and teachers customarily and quite appropriately examine the source of instructional material," and described the new procedures for challenging supplementary material as "unclear, ill-conceived, and onerous," adding, "The instructions are vague and confusing, and they unnecessarily complicate what should be a straightforward decision based on the professional expertise of [Louisiana Department of Education] staff."

At the committee's meeting on January 13, 2009, the LSEA's chief sponsor, Ben Nevers (D-District 12), and Gene Mills of the Louisiana Family Forum successfully lobbied for the removal of the section of the policy that provided, "Materials that teach creationism or intelligent design or that advance the religious belief that a supernatural being created humankind shall be prohibited for use in science classes." The provision forbidding consideration of the beliefs and affiliations of the authors of supplementary material was also removed, according to a report from the Associated Press (2009 Jan 13).

With the adoption of the policy by the BESE on January 15, 2009, it is still unclear what will happen. Steve Monaghan, the president of the Louisiana Federation of Teachers, told WAFB television (2009 Jan 13) in Baton Rouge, "The time spent on this issue may be in total excess of what the problem was because we don't believe there was a problem in the science classroom anyway": teachers in his organization have not complained about the science education materials at their disposals and presumably would not seek to add supplementary materials. Civil liberties organizations have already expressed their readiness to challenge attempts to teach religion in the guise of science in Louisiana's public schools.

In the meantime, the Lafayette *Independent Weekly* (2009 Jan 12)

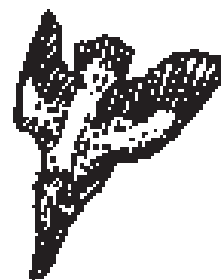
worried about the effect of the LSEA and the policy on Louisiana's reputation. "For many of us interested and active in economic development and hopeful in a newly resurgent Louisiana ... this is not good news," Steve May wrote. "This attempt to pollute the teaching of science in our public schools with religious dogma does more long-term damage to ourselves than all the painful headlines about Edwin Edwards, David Duke or 'Dollar' Bill Jefferson combined, because the damage is far more lasting. Is this the message of educational ignorance that we want to send prospective employers considering locating or relocating to Louisiana?"

Significantly, creationists revealed their understanding of the policy as adopted in letters to the editors of their local newspapers. The Baton Rouge *Advocate*, for example, printed a letter commending the BESE for "their efforts to bring God back into the public schools with promoting creationism as an alternative to the hoax of evolution currently taught" (2009 Jan 28), while the *Monroe News-Star* printed a similar letter thanking "our legislators and governor for taking a stand for God. Our teachers will be able to teach evolution is only a theory. By teaching the option of creationism, I pray our children will realize God created them" (2009 Jan 20).

The Associated Press (2009 Jan 25) analyzed the situation, concluding, "There are disagreements on what exactly will result from policy language the state education board recently adopted for teaching science in Louisiana public schools, but one thing looks pretty clear: sooner or later Louisiana is going back to court in a case that will look like a descendant of the 1987 argument over 'scientific creationism.'" As always, NCSE is working with its allies — including the ACLU of Louisiana and the Louisiana Coalition for Science, a grassroots group recently founded by Barbara Forrest — to prepare for whatever action may be necessary.

#### AUTHOR'S ADDRESS

Joshua Rosenau  
NCSE  
PO Box 9477  
Berkeley CA 94709-0477  
rosenau@ncseweb.org



# A Furor over Creationism at the Royal Society

Glenn Branch

The director of education for the Royal Society of London, Michael Reiss, resigned from his position on September 16, 2008, in the wake of a controversy occasioned by his recent remarks on creationism — even though Reiss, a biologist, accepts evolution, recognizes that creationism lacks any scientific legitimacy, and believes that students ought to be told, when the subject arises, that creationism has no scientific basis.

Reiss's remarks were apparently offered during the British Association for the Advancement of Science's Festival of Science, which took place September 6–11, 2008, in Liverpool; he subsequently posted a corresponding essay, "Science lessons should tackle creationism and intelligent design," on the *Guardian's* science blog on September 11, 2008 (available on-line at <<http://www.guardian.co.uk/science/blog/2008/sep/11/michael.reiss.creationism>>). In the latter, Reiss posed the question, "What should science teachers do when faced with students who are creationists?" and answered that "when teaching evolution, there is much to be said for allowing students to raise any doubts they have (hardly a revolutionary idea in science teaching) and doing one's best to have a genuine discussion."

Reiss added, "The word 'genuine' doesn't mean that creationism or intelligent design deserve equal time." He was also careful to note that whether such a discussion would be appropriate depends "on the comfort of the teacher in dealing with such issues and the make-up of the student body," adding, "I don't believe that such teaching is easy." Nevertheless, he insisted, "I do believe in taking seriously and respectfully the concerns of students who do not accept the theory of evolution, while still introducing them to it. While it is unlikely that this will help students who

have a conflict between science and their religious beliefs to resolve the conflict, good science teaching can help students to manage it — and to learn more science."

Unfortunately, the content of Reiss's message was distorted and sensationalized in the British media. For example, the story in the *Times* of London (2008 Sep 12) was headlined "Leading scientist urges teaching of creationism in schools," and began, "Creationism should be taught in science classes as a legitimate point of view, according to the Royal Society, putting the august science body on a collision course with the Government"; the *Telegraph's* story (2008 Sep 11) was similarly headlined "Creationism should be taught in science classes, says expert," and subheaded, "The theory of creationism should be taught alongside evolution in school science lessons, a leading biologist and education expert has said."

The Royal Society observed in a September 12, 2008, press release (available on-line at <<http://royalsociety.org/news.asp?year=&id=8004>>) that "The Royal Society is opposed to creationism being taught as science," citing the 2006 Interacademy Panel statement (see *RNCSE* 2006 Jul/Aug; 26 [4]: 13–6) on the teaching of evolution, to which the Royal Society is a signatory. It also quoted a clarification from Reiss: "Creationism has no scientific basis. However, when young people ask questions about creationism in science classes, teachers need to be able to explain to them why evolution and the Big Bang are scientific theories but they should also take the time to explain how science works and why creationism has no scientific basis."

Nevertheless, there was a quick outcry from a number of British scientists. Richard Roberts, a member of the Royal Society and a Nobel Prize winner, was quoted in the *Guardian* (2008 Sep 14) as saying, "I think it is outrageous that this man is suggesting that creationism should be discussed in a science classroom. It is an incredible idea and I am drafting a letter to other Nobel laureates — which would be sent to the Royal Society — to ask that Reiss be made to

stand down." And Roberts indeed sent a letter (available on-line at <<http://richarddawkins.net/article,3119,n,n>>) endorsed by his fellow laureates Harold Kroto and John Sulston to the Royal Society, complaining about Reiss's remarks as reported.

Part of the outcry centered on the fact that, in addition to being a biologist and professor of science education, Reiss is also a clergyman, ordained in the Church of England. Richard Dawkins told the *Guardian* (2008 Sep 14), "A clergyman in charge of education for the country's leading scientific organisation — it's a Monty Python sketch," and Roberts's letter to the Royal Society commented, "We gather Professor Reiss is a clergyman, which in itself is very worrisome. Who on earth thought that he would be an appropriate Director of Education, who could be expected to answer questions about the differences between science and religion in a scientific, reasoned way?"

Subsequently, in a September 16, 2008, letter to *New Scientist*, Dawkins distanced himself from the call for Reiss's ouster, describing Roberts's letter's complaint about Reiss's clerical status as "a little too close to a witch-hunt for my squeamish taste," characterizing his Monty Python comparison as "a little uncharitable," and commenting, "Although I disagree with him, what he actually said at the British Association is not obviously silly like creationism itself, nor is it a self-evidently inappropriate stance for the Royal Society to take." (He also mentioned "Eugenie Scott, whose National Center for Science Education is doing splendid work in fighting the creationist wingnuts in America.")

Dawkins's limited defense notwithstanding, the Royal Society announced Reiss's resignation on September 16, 2008. According to a press release (available on-line at <<http://royalsociety.org/news.asp?id=8008>>), "Some of Professor Michael Reiss's recent comments, on the issue of creationism in schools, while speaking as the Royal Society's Director of Education, were open to misinterpretation. While it was not his intention, this has led to damage to the Society's reputation. As a





result, Professor Reiss and the Royal Society have agreed that, in the best interests of the Society, he will step down immediately as Director of Education."

It wasn't only scientists who were critical of Reiss's remarks as reported. After Reiss's resignation, Phil Willis, a Member of Parliament who chairs the Commons Innovation, Universities, Science and Skills Committee, expressed satisfaction with the result, telling the *Times* of London (2008 Sep 17), "I hope the society will now stop burying its head and start taking on creationism." Previously Wills told the *Times* (2008 Sep 16), "I was horrified to hear these views and I reject them totally. They are a step too far and they fly in the face of what science is about. I think if his [Professor Reiss's] views are as mentioned they may be incompatible with his position."

Not all members of the British scientific community were critical of Reiss. After his resignation, Roland Jackson, chief executive of the British Association for the Advancement of Science, told BBC News (2008 Sep 16) that his departure was a "real loss," adding, "I was at the actual discussion and what I heard him say, however it has been reported, was essentially the position advocated by the Royal Society." Robert Winston, professor of science and society at Imperial College London and a distinguished medical scientist and science popularizer, lamented, "This is not a good day for the reputation of science or scientists."

Paul Nurse, a member of the Royal Society and Nobel laureate who did not sign the Roberts letter, took a somewhat intermediate position, telling *Nature* (in a piece published on-line under the dreadful headline "Creationism stir fries Reiss"; 2008 Sep 17), "It does not matter what someone's religious beliefs are as long as he does the job properly. The issue for me here is his competency in the job. I only saw the media coverage of his speech, but it does not look as though he handled it well. Because creationism in the classroom is such a sensitive subject, you have to be very careful and very clear about what you say."

Across the Atlantic, Leslie S

Jones of Valdosta State University, who coedited a recent anthology, *Teaching about Scientific Origins: Taking Account of Creationism* (New York: Peter Lang Publishing, 2007; reviewed in *RNCSE* 2008 May/June; 28 [3]: 23-5), with Reiss, expressed shock at the events. She told *Nature* (on-line; 2008 Sep 17), "Michael has a rare blend of transdisciplinary credentials that give him critical insight into the social controversy surrounding the teaching of evolution. He has never advocated the teaching of creationism."

A subsequent editorial in *Nature* (2008; 445: 431-2) argued:

Those who argue that allowing discussion of creationism in a science class gives it legitimacy, and that students who ask about it should be firmly directed to take their questions elsewhere, are misguided.

Eugenie Scott, executive director of the National Center for Science Education in Oakland, California, and a long-time advocate for the teaching of evolution, points out that in the real world, any such shut-up-and-take-it-elsewhere response from the teacher will inevitably be perceived by the student (and his or her classmates) as a humiliating personal put-down. It will obstruct rather than encourage enquiry and understanding. It will also invite complaints from outraged parents.

What is more, it will squander what experienced educators like to call "a teachable moment". All too often, that moment is the one opportunity that a school has to engage resistant students and introduce them to what science has to say.

Reiss is returning to his position of Professor of Science Education at the Institute of Education at the University of London.

#### AUTHOR'S ADDRESS

Glenn Branch  
NCSE  
PO Box 9477  
Berkeley CA 94709-0477  
branch@ncseweb.org

## The Latest on *Expelled*

Eugenie C Scott

As 2008 drew to a close, the good news for the producers of *Expelled: No Intelligence Allowed* was that their creationist propaganda movie was getting a bit of press again. The bad news is that it was in the lists of the worst movies of 2008, as well as in a fierce, detailed, and incisive review by the popular film critic Roger Ebert.

### EXPELLED IN "WORST-OF" LISTS

The *Onion's* AV Club (2008 Dec 16), was quickest out of the gate, commenting:

There are terrible movies, and then there are terrible movies that cause harm to society by feeding into its ignorance.

Nathan Frankowski's odious anti-evolution documentary belongs in the latter category. ... Few moments in cinema in 2008 were as shameless and disgusting as the *Expelled* sequence where Stein solemnly visits a Nazi death camp and unsuitably links "survival of the fittest" theory to the Holocaust.

John Serba of the *Grand Rapids Press* (2008 Dec 26) wrote, "Ben Stein hosts this pro-Intelligent Design documentary that forgets to include a compelling argument for this viewpoint, and instead chooses to equate Darwinism and its legions of rational scientist followers with Nazis and the Holocaust. Facts rooted in reality are at a premium in this insidious, crassly manipulative dreck." Roger Moore of the *Orlando Sentinel* (2008 Dec 26) commented, "Ben Stein's documentary was a cynical attempt to sucker Christian conservatives into thinking they're losing the 'intelligent design' debate because of academic 'prejudice.'"

Stephen Whitty of the *Newark Star-Ledger* (2008 Dec 27) described *Expelled* as lift-



Eugenie C Scott is NCSE's executive director.

ing “its nonsensical knowledge of early man from an Alley Oop comic and its sense of honest inquiry from a snake-handling preacher.” In the *LA City Beat* (2008 Dec 30), Andy Klein wrote:

Stein’s “intelligent design” documentary has all the red flags — inadequate or misleading identification of interviewees, aggressively manipulative editing, extraordinary claims without extraordinary evidence, and extreme leaps of logic ... particularly suggesting guilt by association, even to the point of laying blame for the Holocaust on Darwin.

And Ken Hanke of the Asheville, North Carolina, *Mountain Xpress* (2008 Dec 31) said that *Expelled* was “as corrupt a piece of work as you’ll ever encounter.”

*Expelled* fared no better north of the border. Jay Stone of the Canwest News Service (2008 Dec 26) described *Expelled* as “a masterpiece of intellectual dishonesty.” And Richard Crouse of *Canada AM* (2008 Dec 30) commented:

Wrapping his thesis in good old American jingoistic rhetoric — remember this guy used to write speeches for Nixon — Stein repeatedly compares Darwinist scientists to communists ... and even makes the outrageous connection between Darwin’s theory and Nazism.

Crouse added, “Perhaps it isn’t just a coincidence that the host’s initials are BS.”

#### ROGER EBERT ON EXPELLED

Roger Ebert reviewed *Expelled* in a December 3, 2008, post entitled “Win Ben Stein’s mind” on his blog on the *Chicago Sun-Times* website (available on-line at <[http://blogs.suntimes.com/ebert/2008/12/win\\_ben\\_steins\\_mind.html](http://blogs.suntimes.com/ebert/2008/12/win_ben_steins_mind.html)>) — and he pulled no punches. “The more you know about evolution, or simple logic, the more you are likely to be appalled by the film. No one with an ability for critical thinking could watch more than three min-

utes without becoming aware of its tactics,” he wrote. And he added:

This film is cheerfully ignorant, manipulative, slanted, cherry-picks quotations, draws unwarranted conclusions, makes outrageous juxtapositions (Soviet marching troops representing opponents of ID), pussy-foots around religion (not a single identified believer among the ID people), segues between quotes that are not about the same thing, tells bald-faced lies, and makes a completely baseless association between freedom of speech and freedom to teach religion in a university class that is not about religion.

“And there is worse, much worse,” Ebert continued, taking special offense at *Expelled*’s claim that the acceptance of evolution resulted in the Holocaust — “It fills me with contempt.” Previously, the Anti-Defamation League said that the movie’s claim “is outrageous and trivializes the complex factors that led to the mass extermination of European Jewry.” *Expelled*’s lead, Ben Stein, responded, “It’s none of their f—ing business,” according to Peter McKnight, writing in the *Vancouver Sun* (2008 Jun 21).

For a thorough critique of *Expelled*, including a collection of links to reviews of the movie, visit NCSE’s *Expelled Exposed* website (<<http://www.expelledexposed.com>>). Additionally, a recent issue of *Reports of the NCSE* (2008 Sep-Dec; 28 [5-6]) is a special issue devoted to debunking *Expelled*, containing reports on its reception, a summary of the ways in which organizations with a stake in the creationism/evolution controversy reacted, a summary of the various controversies over its use of copyrighted material, and a detailed explanation of its unsuitability for the classroom.

#### AUTHOR’S ADDRESS

Eugenie C Scott  
NCSE  
PO Box 9477  
Berkeley CA 94709-0477  
[scott@ncseweb.org](mailto:scott@ncseweb.org)

## Victory over “Weaknesses” in Texas

Glenn Branch

In a close vote on January 23, 2009, the Texas state board of education approved a revision of the state’s science standards lacking the controversial “strengths and weaknesses” language, which in 2003 was selectively applied by members of the board attempting to dilute the treatment of evolution in the biology textbooks then under consideration. The stakes are high: the standards will determine what is taught in Texas’s public school science classrooms and the content of the biology textbooks approved for use in the state for the next ten years. And the threat is real: seven members of the fifteen-member board, including its chair, avowed creationist Don McLeroy, are regarded as in favor of attempts to undermine the teaching of evolution in Texas schools. The removal of the “strengths and weaknesses” language therefore represented a tremendous victory for science education in Texas, with the *Dallas Morning News* (200 Jan 23) describing the failure of a proposed amendment to reintroduce it as “a major defeat for social conservatives.” But the struggle is not over, for a number of scientifically indefensible revisions to the biology and earth and space science standards were adopted at the last minute. Defenders of the integrity of science education in Texas plan to expose the flaws in these revisions and hope for a reversal when the board takes its final vote on the standards at its March 26-27, 2009, meeting.

#### STRENGTHS AND WEAKNESSES

The “strengths and weaknesses” language occurs in the old Texas state science standards, which include a requirement that reads, “The student is expected to analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using

Glenn Branch is NCSE’s deputy director.



scientific evidence and information.” The first draft of the revised standards replaced the “strengths and weaknesses” language with “The student is expected to analyze and evaluate scientific explanations using empirical evidence, logical reasoning, and experimental and observational testing.” The change was hailed by the Texas Freedom Network, Texas Citizens for Science, and the 21st Century Science Coalition, as well as by the editorial boards of the *Austin American-Statesman* (2008 Oct 6) and the *Corpus Christi Call-Times* (2008 Nov 20). Additionally, a survey conducted by Raymond Eve and the Texas Freedom Network Education Fund demonstrated that the vast majority of biologists at universities in Texas rejected the idea of teaching the supposed weaknesses of evolution (see *RNCSE* 2009 Jan/Feb; 29 [1]: 7).

Nevertheless, as previously reported (*RNCSE* 2009 Jan/Feb; 29 [1]: 4-7), when the Texas board of education began to hear testimony about the new standards on November 19, 2008, it was presented not with the first draft but with a second draft, in which the “strengths and weaknesses” language was replaced with a variant: “The student is expected to analyze and evaluate strengths and limitations of scientific explanations including those based on accepted scientific data, and evidence from students’ observations, experiments, models, and logical statements.” At the meeting, defenders of the integrity of science education strongly argued that “strengths and limitations” was no improvement over “strengths and weaknesses.” Indeed, the *Fort Worth Star-Telegram* (2008 Nov 20) observed, “With few exceptions, the speakers — scientists, teachers, clergy and grassroots activists — took the side of evolution,” a situation that evidently vexed the chair of the board, Don McLeroy, who complained, “This is all being ginned up by the evolution side.”

Subsequently, a third draft of the standards appeared in late December 2008, reverting to the first draft’s “analyze and evaluate” language. In its discussion of the nature of science, the third draft is

similar but not identical to the first draft. According to the first draft, “Science uses observational evidence to make predictions of natural phenomena and to construct testable explanations. If ideas are based upon purported forces outside of nature, they cannot be tested using scientific methods.” The third draft reads, “Science, as defined by the National Academy of Sciences, is the ‘use of evidence to construct testable explanations and predictions of natural phenomena, as well as the knowledge generated through this process.’ ... Students should know that some questions are outside the realm of science because they deal with phenomena that are not scientifically testable.” It was the third draft that was under consideration at the January 2009 meeting of the state board of education.

#### BEFORE THE VOTE

On January 21, 2009, the first day of the board’s January meeting, the board heard testimony about the science standards from dozens of witnesses, including NCSE’s executive director Eugenie C. Scott, who urged the board to heed the advice of the scientific and educational experts who revised the standards and omitted the “strengths and weaknesses” language. *The New York Times* (2009 Jan 22) quoted her as explaining, “The phrase ‘strengths and weaknesses’ has been spread nationally as a slogan to bring creationism in through the back door.” And the *Dallas Morning News* (2009 Jan 21) added, “Scott warned the board that if it adopts the requirement, it will lead to textbooks that contain pseudoscience and inaccuracies as publishers try to appease the state and get their books sold in Texas. ‘If you require textbook publishers to include bad science, you’re going to have problems,’ she said, asserting that Texas students will suffer as a result.”

Kevin Fisher, a past president of the Science Teachers Association of Texas, told the *Times* that the attempt to retain the “strengths and weaknesses” language is “an attempt to bring false weaknesses into the classroom in an attempt to get students to reject evolution.” And David M. Hillis, a distinguished professor of

biology at the University of Texas, Austin, concurred, adding, “Every single thing they are representing as a weakness is a misrepresentation of science ... These are science skeptics. These are people with religious and political agendas.” Ryan Valentine of the Texas Freedom Network worried about the consequence for Texas’s image: “A misguided crusade to include phony weaknesses in the theory of evolution in our science curriculum will send a message to the rest of the nation that science takes a back seat to politics in Texas,” the *Morning News* reported him as saying.

Also testifying were people who supported the “strengths and weaknesses” language, including a representative of the Discovery Institute, often betraying the connection between the language and creationism. A teacher quoted by the *Morning News*, for example, said, “As a creationist, I don’t want creationism taught in science classes, but this proposal [to drop the strengths and weaknesses rule] smacks of censorship.” A mechanical engineer quoted by the *Times* said, echoing a rhetorical theme prominent in creationist circles since the Scopes era, “Textbooks today treat it as more than a theory, even though its evidence has been found to be stained with half-truths, deception and hoaxes.” (As NCSE’s Glenn Branch and Louise S. Mead recently wrote in *Evolution: Education and Outreach* [2008; 1 (3): 287-9], “[William Jennings Bryan’s] position — that it is okay to teach about evolution but only as something conjectural or speculative, as ‘just a theory’ and not as a fact — continues to resonate.”)

#### THE CRUCIAL VOTE

The crucial vote not to restore the “strengths and weaknesses” language took place on January 22, 2009, the second day of the board’s meeting. Board members who opposed the amendment cited the need to respect the work of the experts, according to the *Morning News*, with Mary Helen Berlanga commenting, “We’re not talking about faith. We’re not talking about religion. ... We’re talking about science. We need to stay with our experts and respect what they have requested us to do,” and







Geraldine Miller similarly commenting, “We need to respect what our teachers have recommended to us.” Rick Agosto, widely considered to be a swing voter, was quoted in the *San Antonio Express-News* (2009 Jan 23) as saying, “I have to consider the experts,” and Bob Craig was quoted in the *Austin American-Statesman* (2009 Jan 23) as saying, “We appointed individuals, educators — good solid people — to review the (standards) in science. They made a recommendation, and, again, we are taking away from what the educators have indicated to us is the best wording.”

Members of the board who favored the amendment seemed, however, to consider themselves to be experts. Ken Mercer — who is on record as claiming that evolution is falsified by the absence of any transitional forms between cats and dogs — was reported by the *Express-News* as saying that he was not going to rubber-stamp the recommendations of the experts who revised the standards. And he was also quoted by the *Morning News* as complaining, “The other side has a history of fraud. Those arguing against us have a bad history of lies.” Steven Schaefersman of Texas Citizens for Science, who was blogging from the meeting (see sidebar, p 14), reported that Mercer cited “the bogus and misleading examples of Piltdown Man, Haeckel’s vertebrate embryo draw-

ings, the peppered moths that were glued to tree trunks, and the half-bird, half-dinosaur that were all ‘evolutionary frauds’” — all of which are familiar staples of creationist literature attempting to discredit evolution.

Ultimately, as the *Morning News* reported, “The amendment failed to pass on a 7–7 vote, with four Democrats and three Republicans voting no. Another Democrat — who would have opposed the amendment — was absent.” The significance of the vote was apparent to the Texas media: for example, the headline of the story in the *Morning News* was “Texas Board of Education votes against teaching evolution weaknesses”; the *San Antonio Express-News* began its story with the sentence, “A 20-year-old Texas tradition allowing public schools to teach ‘both the strengths and weaknesses’ of evolution succumbed to science Thursday when the State Board of Education voted to abolish the wording from its curriculum standards”; and the headline of the story in the *Austin American-Statesman* was “State board shuns disputed language on evolution.” And the momentousness of the vote was not lost on NCSE’s executive director Eugenie C. Scott, who explained in a January 23, 2009, press release (available on-line at <[from-texas-science-standards-004231>\): “The misleading language \[in the original science standards\] has been a creationist loophole in the science TEKS \[Texas Essential Knowledge and Skills\] for decades. Its removal is a huge step forward.”](http://ncseweb.org/news/2009/01/news/2009/01/weaknesses-removed-</a></p></div><div data-bbox=)

### A QUALIFIED VICTORY

The victory was not complete, however. A flurry of amendments introduced by creationist members of the board sought to compromise the treatment of evolution in the biology standards. Terri Leo successfully proposed a revision to the standards to replace verbs such as “identify,” “recognize,” and “describe” in section 7 of the high school biology standards with “analyze and evaluate” — no other section of the standards was treated similarly. Worse, Don McLeroy successfully proposed a revision to section 7 to require that students “analyze and evaluate the sufficiency or insufficiency of common ancestry to explain the sudden appearance, stasis and sequential nature of groups in the fossil record.” It is significant that “sudden appearance” is a creationist catchphrase, associated in particular with young-earth creationist Wendell Bird. During oral arguments in *Edwards v Aguillard*, for example, Jay Topkis observed, “those buzzwords come right out of Mr Bird’s lexicon. ... They’re his.”

## STRENGTHS, WEAKNESSES, CREATIONISM

As the “strengths and weaknesses” language was under debate in Texas, evidence continued to accumulate that calling for teaching the “strengths and weaknesses” of evolution is, in practice, simply a form of stealth creationism. For example, in a post (available on-line at <<http://www.mysanantonio.com/opinion/commentary/36076039.html>> on the website of the *San Antonio Express-News* (2008 Dec 12), a representative of the San Antonio Bible Based Sciences Association offered to provide “scientific evidence of weaknesses in evolution and for creation,” including “the fact that evolution violates the 1st and 2nd Laws of Thermodynamics, as well as the Law of Biogenesis,” as well as “creation evidence in the fields of microbiology, genetics, probability, biochemistry, biology, geology and physics which support creation and undermine evolution.”

And in a December 1, 2008, post on its blog (available on-line at <<http://tfnblog.wordpress.com/2008/12/01/creationists-with-a-political-thesaurus/>>>), the Texas Freedom Network examined how members of the anti-evolution faction on the state board of education have responded to a Texas religious right organization’s questionnaire over the past few election cycles. According to TFN, in 2008, they “strongly favored” forcing publishers to include “strengths and weaknesses of the theory of evolution” in biology textbooks, while in 2006, they “strongly favored” the teaching of “intelligent design” as a “viable” theory in public school science classrooms, and in 2002, they “strongly favored” the same — even though the question was prominently, and not inaccurately, labeled “Creationism” then. “Who,” TFN asked, “do they think they’re fooling?”

Just as worrying were the amendments introduced by creationist members of the board that sought to compromise the treatment of evolution and related concepts in the earth and space science standards. Barbara Cargill successfully proposed revisions to the standards to add, in her words, “humility and tentativeness”; in the view of Steven Schafersman of Texas Citizens for Science, however, “All five of the changes ... are not needed and were proposed to weaken and damage the ESSTEKS.” The worst change was to a requirement that students “evaluate a variety of fossil types, transitional fossils, fossil lineages, and significant fossil deposits with regard to their appearance, completeness, and rate and diversity of evolution,” which now reads, “evaluate a variety of fossil types, proposed transitional fossils, fossil lineages, and significant fossil deposits and assess the arguments for and against universal common descent in light of this fossil evidence.”

NCSE's Eugenie C. Scott, who was at the meeting and observed the board's confusion over these amendments, commented in NCSE's January 23, 2009, press release, “They didn't ... have time to talk to scientists about the creationist-inspired amendments made at the last minute. Once they do, I believe these inaccurate amendments will be removed.” The Texas Freedom Network concurred, observing on its blog (see sidebar, p. 14):

Board members — none of whom are research scientists, much less biologists — appeared confused when they were asked to consider amendments with changes to specific passages of the standards. That's why it's foolish to let dentists and insurance salesmen play-pretend that they're scientists. The result is that the standards draft includes language that is more tentative. Not good, but not necessarily disastrous overall.

With respect to McLeroy's revision, TFN added, “What we saw is what happens when a dentist pretends that he knows more about science than scientists do.”

## THE AFTERMATH

All of the action — the vote not to restore the “strengths and weaknesses” language and the flurry of amendments from creationist members of the board apparently eager to salvage a small victory from the defeat — occurred on the second day of the board's meeting. On the third day, January 23, 2009, there was virtually no discussion as the board voted unanimously to adopt the science standards as revised on the previous day, without hearing any further comments from those in attendance. The vote, again, is only a preliminary vote, with a final vote on the standards expected at the board's March 26–27, 2009, meeting. The *Houston Chronicle* (2009 Jan 23) reported, “Scientists vowed to fight the plan before the board takes final action in March”; since the survey conducted by Raymond Eve and the Texas Freedom Network Education Fund demonstrated that the vast majority of biologists at universities in Texas rejected the idea of teaching the supposed weaknesses of evolution, there ought to be no shortage of scientifically competent advice for the board to heed.

Reports in the press recognized that the overall result was a qualified victory for science, with the *Houston Chronicle* (2009 Jan 23), for example, reporting, “Texas schools won't have to teach the weaknesses of evolution theories anymore, but the State Board of Education ushered in other proposed changes Friday that some scientists say still undermine evolution instruction and subject the state to ridicule,” and reporting Steven Schafersman of Texas Citizens for Science as concerned that McLeroy's revision, if not reversed, would make the standards a laughingstock. David Hillis, a distinguished biology professor at the University of Texas at Austin, added, “This new proposed language is absurd. It shows very clearly why the board should not be rewriting the science standards, especially when they introduce new language that has not even been reviewed by a single science expert. He also told *The New York Times* (2009 Jan 24), “It's a clear indication that the chairman of the

## TEACH THEM SCIENCE

As the Texas state board of education prepared to vote on a revised set of state science standards, two organizations — one secular, one religious — joined forces to produce a new website, Teach Them Science (<<http://www.teachthemsience.org>>), in order to advocate for a twenty-first-century science education for the students in Texas's public schools. Sponsored by the Center for Inquiry Austin and the Clergy Letter Project, the Teach Them Science website is intended to empower parents, educators, and concerned citizens to rally in support of the new standards, which treat evolution as the central and unifying principle of the biological sciences that it is, and to resist the efforts of the creationist faction on the board to restore the “strengths and weaknesses” language that was misused, in 2003, to try to undermine the treatment of evolution in biology textbooks submitted for adoption in Texas.

In a January 15, 2009, press release (available online at <<http://www.teachthemsience.org/press/2009-01-15>>), Clare Wuellner, the executive director of CFI Austin, explained, “We knew people would care if they just knew what was happening. But too many people didn't know about this incredibly important issue. We decided to do something about it.” As the press release observes, the Teach Them Science website “explains how curriculum is developed in Texas, provides a basic but accurate understanding of science, explains in simple terms why teaching evolution is essential to an effective science curriculum, explains the flaws in the SBOE's politically-motivated changes to the science curriculum, explains how teaching the alleged ‘strengths and weaknesses’ would actually teach students to think unscientifically, motivates parents, teachers and concerned citizens to become involved in the determination of what our children are taught, [and] gives the public tools to take action.”

The Teach Them Science website also emphasizes the fact that plenty of people of faith accept evolution, contrary to the misconception that evolution is intrinsically at odds with religious belief. “More than 12,000 clergy members can't be wrong,” Michael Zimmerman, founder of the Clergy Letter Project, quipped in the same press release, adding, “Kids deserve to learn about the best scientists have to offer, and religion has nothing to fear.” In supporting a scientifically appropriate and pedagogically responsible treatment of evolution in Texas's public schools, Teach Them Science joins Texas Citizens for Science, the Texas Freedom Network, the 21st Century Science Coalition, the Texas Academy of Science, the Academy of Medicine, Engineering and Science of Texas, the Texas Science Education Leadership Association, and the Science Teachers Association of Texas.

state school board doesn't understand the science.”

In the same vein, editorials in Texas and nationally have praised

## FOR FURTHER READING

In addition to the newspaper reports cited, a variety of on-line sources provided detailed, candid, and often uninhibited running commentary on the proceedings. Texas Citizens for Science's Steven Schafersman blogged, and posted photographs, on the *Houston Chronicle's* Evo.Sphere blog: <<http://www.chron.com/commons/readerblogs/evosphere.html>>; the Texas Freedom Network was blogging on its TFN Insider blog: <<http://tfnblog.wordpress.com/>>; NCSE's Joshua Rosenau was blogging on his personal blog, Thoughts from Kansas (hosted by ScienceBlogs): <<http://www.scienceblogs.com/tfk/>>; and the *Houston Press* blogged the first day of the meeting: <[http://blogs.houstonpress.com/hairballs/political\\_animals/](http://blogs.houstonpress.com/hairballs/political_animals/)>. For those wanting to get their information from the horse's mouth, minutes and audio recordings of the board meeting will be available on the Texas Education Agency's website via <[http://ritter.tea.state.tx.us/sboe/minutes\\_archived.html](http://ritter.tea.state.tx.us/sboe/minutes_archived.html)> and <[http://ritter.tea.state.tx.us/sboe/audio\\_archived.html](http://ritter.tea.state.tx.us/sboe/audio_archived.html)>. NCSE's previous reports on events in Texas are available on-line at <<http://ncseweb.org/news/texas>>.

the omission of the "strengths and weaknesses" language but lamented the creationist revisions. The *Austin American-Statesman* (2009 Jan 24) seemed pleased if not excited about what it termed "an incremental step away from dogma-driven curriculum decision-making," while the *Waco Tribune* (2009 Jan 26) was happy about the omission of a phrase that "was meant to open the door to the undermining of evolution theory" but dismayed by McLeroy's revision, which it described as "a fall-back attempt by the right wing of the board to hang tough in its effort to undermine evolution theory." The *New York Times* (2009 Jan 26), which earlier (2009 Jan 22) acknowledged that "[t]he debate here has far-reaching consequences; Texas is one of the nation's biggest buyers of textbooks, and publishers are reluctant to produce different versions of the same material," editorialized, "The lesson we draw from these shenanigans is that scientifically illiterate boards of education should leave the curriculum to educators and scientists who know what constitutes a sound education."

### AUTHOR'S ADDRESS

Glenn Branch  
NCSE  
PO Box 9477  
Berkeley CA 94709-0477  
branch@ncseweb.org

# UPDATES

**Alabama:** House Bill 300 (see sidebar, p 15, for the text), introduced in the Alabama House of Representatives on February 3, 2009, by David Grimes (R-District 73) and referred to the House Education Policy Committee, is the latest in a string of "academic freedom" bills aimed at undermining the teaching of evolution in Alabama. Previous such bills in Alabama — HB 923 (which Grimes also sponsored) in 2008; HB 106 and SB 45 in 2006; HB 352, SB 240, and HB 716 in 2005; HB 391 and SB 336 in 2004 — failed to win passage. In 2004, a cosponsor of SB 336 told the *Montgomery Advertiser* (2004 Feb 18), "This bill will level the playing field because it allows a teacher to bring forward the biblical creation story of humankind."

**Florida:** The 11th Circuit Court of Appeals, in a decision issued on December 30, 2008, denied Kent Hovind's appeal of his conviction. The flamboyant creation science evangelist was found guilty of 58 charges — including making threats against IRS investigators, failing to pay almost half a million dollars in payroll taxes, and structuring his financial transactions in order to evade federal reporting requirements — in a federal court on November 2, 2006 (see *RNCSE* 2006 Jul/Aug; 26 [4]: 12-3), and sentenced to ten years in prison on January 19, 2007 (see *RNCSE* 2007 Jan-Apr; 27 [1-2]: 4-9), which he is currently serving in a medium security facility in Edgefield, South Carolina. The court's decision (available on-line at <<http://www.ca11.uscourts.gov/unpub/ops/200710090.pdf>>) concluded, contrary to Hovind's arguments, that the indictments were valid, that the government introduced sufficient evidence to support the convictions, that the district court did not err in adding a sentence to the jury instructions, and that Hovind (as well as his wife Jo Hovind) was correctly sentenced. According to a January 23, 2009, post (available on-line at <<http://www.cseblogs.com/?p=181>>) on the Creation Science Evangelism blog by Eric Hovind, a

stay on Jo Hovind's sentence was lifted with the denial of the appeal, and she entered prison to serve her year-and-a-day sentence on January 20, 2009. Eric Hovind added, "We are currently in litigation with the government concerning the property issue. Because the decisions conflict with previous Supreme Court rulings, our attorneys are requesting the 11th Circuit re-examine the case."

**Florida:** Senate Bill 2396, filed on February 27, 2009, would, if enacted, amend a section of Florida law to require "[a] thorough presentation and critical analysis of the scientific theory of evolution." The bill is sponsored by Stephen R Wise (R-District 5), who was in the news earlier in February when he announced his intention to introduce a bill requiring "intelligent design" to be taught in Florida's public schools. "If you're going to teach evolution, then you have to teach the other side so you can have critical thinking," he told the *Jacksonville Times-Union* (2009 Feb 8). Wise acknowledged that his bill was likely to invite a legal challenge, but contended, "Someplace along the line you've got to be able to make a value judgment of what it is you think is the appropriate thing." Evidently he changed his mind about how to accomplish his goal, since "intelligent design" is not mentioned in the bill.

But the phrase "[a] thorough presentation and critical analysis of the scientific theory of evolution" is familiar from the previous legislative session in Florida. House Bill 1483, which originally purported to protect the right of teachers to "objectively present scientific information relevant to the full range of scientific views regarding biological and chemical evolution," was eventually amended — due to concerns about its constitutionality — to require the public schools to provide "[a] thorough presentation and critical analysis of the scientific theory of evolution." Challenged to justify the measure, its sponsor Alan Hays (R-District 25) claimed that it was necessary



to protect teachers seeking to “provide a critical analysis” of evolution, although the *St Petersburg Times* (2008 Mar 6) reported that it was unable to substantiate any claims of persecution.

During the previous legislative session, the House of Representatives preferred the “thorough presentation and critical analysis of the scientific theory of evolution” language of HB 1483 — voting 71–43 to adopt the language on April 28, 2008 — while the Senate preferred the “full range of scientific views regarding biological and chemical evolution” language of SB 2692. Wise was then dismissive of HB 1483’s language, telling the *Sarasota Herald Tribune* (2008 Apr 24) that Hays “must be hitting the sauce if he thinks he’s going to send the bill back” to the Senate. In any case, the two chambers were unable to agree on the wording of a bill before the legislative session expired, prompting the *Tampa Tribune* (2008 May 3) to comment in its editorial reviewing the accomplishments of the legislature, “The session will be remembered for what *wasn’t* done to compromise the quality of education in Florida” (emphasis in original).

The phrase “critical analysis” was used to undermine the teaching of evolution situation in Ohio from 2002 to 2006. As previously detailed (*RNCSE* 2006 May/June; 26 [3]: 7–11), in 2002 Ohio adopted a set of state science standards that included a controversial indicator calling for students to be able to “describe how scientists continue to investigate and critically analyze aspects of evolutionary theory.” At the time, it was feared that the indicator would provide a pretext for the introduction of creationist misrepresentations of evolution; in 2004, those fears proved to be justified, when the state board of education voted to adopt a model lesson plan riddled with scientific inaccuracies and pedagogical infelicities. But after the decision in *Kitzmiller v. Dover* and the revelation that the lesson plan was adopted despite warnings from experts at the Ohio Department of Education, the board voted in 2006 to rescind both the model lesson plan and the indicator.

## ALABAMA’S HOUSE BILL 300

### A BILL TO BE ENTITLED AN ACT

*Providing teacher rights and protection for a public school teacher or a teacher at an institution of higher education to present scientific information pertaining to the full range of scientific views in applicable curricula or in a course of learning; providing employment and tenure protection and protection against discrimination for any public school teacher or teacher at a public institution of higher education related to the presentation of such information; and providing student protection for subscribing to a particular position on views.*

BE IT ENACTED BY THE LEGISLATURE OF ALABAMA:

Section 1. This law shall be known as the “Academic Freedom Act.”

Section 2. The Legislature finds that existing law does not expressly protect the right of teachers identified by the United States Supreme Court in *Edwards v. Aguillard* to present scientific critiques of prevailing scientific theories. The Legislature further finds that existing law does not expressly protect the right of students to hold a position on views. It is the intent of the Legislature that this act expressly protects those rights.

Section 3. Every K–12 public school teacher or teacher or instructor in any two-year or four-year public institution of higher education, or in any graduate or adult program thereof, in the State of Alabama, shall have the affirmative right and freedom to present scientific information pertaining to the full range of scientific views in any curricula or course of learning.

Section 4. No K–12 public school teacher or teacher or instructor in any two-year or four-year public institution of higher education, or in any graduate or adult program thereof, in the State of Alabama, shall be terminated, disciplined, denied tenure, or otherwise discriminated against for presenting scientific information pertaining to the full range of sci-

entific views in any curricula or course of learning, provided, with respect to K–12 teachers, the Alabama Course of Study for Science has been taught as appropriate to the grade and subject assignment.

Section 5. Students may be evaluated based upon their understanding of course materials, but no student in any public school or institution of higher education, shall be penalized in any way because he or she may subscribe to a particular position on any views.

Section 6. The rights and privileges contained in this act apply when topics are taught that may generate controversy, such as biological or chemical origins. Nothing in this act shall be construed as requiring or encouraging any change in the state curriculum standards in K–12 public schools, nor shall any provision of this act be construed as prescribing the curricular content of any course in any two-year or four-year public institution of higher education in the state.

Section 7. Nothing in this act shall be construed as protecting as scientific any view that lacks published empirical or observational support or that has been soundly refuted by empirical or observational science in published scientific debate. Likewise, the protection provided by this act shall not be restricted by any metaphysical or religious implications of a view, so long as the views are defensible from and justified by empirical science and observation of the natural world.

Section 8. Nothing in this act shall be construed as promoting any religious doctrine, promoting discrimination for or against a particular set of religious beliefs, or promoting discrimination for or against religion or non-religion.

Section 9. This act shall become effective on the first day of the third month following its passage and approval by the Governor, or its otherwise becoming law.

**Iowa:** House File 183, introduced in the Iowa House of Representatives on February 3, 2009, and referred to the House Education Committee, is a new anti-evolution “academic freedom” bill. Entitled the “Evolution Academic Freedom Act,” HF 183 contains three sections. In the first, it is contended that “current law does not expressly protect the right of instructors to objectively present scientific information relevant to the full range of scientific views regarding chemical and biological

evolution,” that “instructors have experienced or feared discipline, discrimination, or other adverse consequences as a result of presenting the full range of scientific views regarding chemical and biological evolution,” and that “existing law does not expressly protect students from discrimination due to their positions or views regarding biological or chemical evolution.”

The following sections of the bill provide that teachers in the state’s public schools and instructors in the state’s public communi-

ty colleges and state universities may “objectively present scientific information relevant to the full range of scientific views regarding biological and chemical evolution in connection with teaching any prescribed curriculum regarding chemical or biological evolution” and that they “shall not be disciplined, denied tenure, terminated, or otherwise discriminated against” for doing so. Also, the bill adds, although students “shall be evaluated based upon their understanding of course materials through standard testing procedures,” they “shall not be penalized for subscribing to a particular position or view regarding biological or chemical evolution.”

Presumably attempting to avert a likely challenge to its constitutionality, HF 183 provides 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.” The bill also attempts to avoid a likely charge of inappropriate legislative micromanagement of the curriculum by disclaiming any intention to “require or encourage any change in the core curriculum adopted by the state board of education ... the core content standards ... or the accreditation standards and curriculum definitions” or in “curricula on biological or chemical evolution adopted by the board of directors of a community college or the state board of regents.”

The bill’s sponsor is Rod A Roberts (R-District 51), one of the four assistant minority leaders in the Iowa House of Representatives. The *Sioux City Journal* (2009 Feb 5) reports that Roberts, an ordained minister in the Church of Christ, is contemplating a bid for the Republican nomination for governor in 2010. HF 183 is apparently the only anti-evolution bill to be introduced in Iowa within at least the past ten years. As of February 5, 2009, only two lobbyists were listed on the Iowa General Assembly’s website as having declared their interest in the bill: the Iowa Christian Alliance favoring it, and the Iowa State Education Association — the state affiliate of the National Education Association, representing over

34 000 education employees in Iowa — opposing it.

Over two hundred faculty members at Iowa’s colleges and universities have endorsed a statement calling on Iowa’s legislature to reject HF 183. Responding to the contention that “current law does not expressly protect the right of instructors to objectively present scientific information relevant to the full range of scientific views regarding chemical and biological evolution,” the statement explains:

It is misleading to claim that there is any controversy or dissent within the vast majority of the scientific community regarding the scientific validity of evolutionary theory. Since there is no real dissent within the scientific community ... “academic freedom” for alternative theories is simply a mechanism to introduce religious or non-scientific doctrines into our science curriculum.

HF 183 contends that “instructors have experienced or feared discipline, discrimination, or other adverse consequences as a result of presenting the full range of scientific views regarding chemical and biological evolution,” and Roberts told the Iowa City *Press-Citizen* (2009 Feb 27) that his bill is “about the freedom that an instructor and students can engage in without fear of criticism, censure or fear of losing one’s job.” But such claims of persecution have not been substantiated, the authors of the statement — Hector Avalos of Iowa State University and James W Demastes and Tara C Smith of the University of Iowa — explained to the *Ames Tribune* (2009 Feb 25).

NCSE’s Glenn Branch told the *Chronicle of Higher Education* (2009 Feb 25) that the new Iowa statement is apparently the first organized response to such a bill by college faculty members throughout a state. Between the opposition from college and university instructors and the opposition of the Iowa State Education Association, the bill’s prospects are dim. Although the University of Iowa is not taking a position on

the bill, its legislative liaison was quoted by the *Press-Citizen* as saying, “From what I’ve heard, I don’t anticipate it[s] making it past the first funnel. We have concerns about the bill, but we are not expecting it to move.”

**Louisiana:** The executive committee of the Society of Integrative and Comparative Biology decided not to hold any future meetings in New Orleans owing to “the official position of the state in weakening science education and specifically attacking evolution in science curricula,” according to a February 5, 2009, letter (available on-line at <<http://www.sicb.org/resources/LouisianaLetterJindal.pdf>>) from SICB’s president, Richard Satterlie, to Louisiana’s governor Bobby Jindal. Noting that the last SICB meeting, held in Boston, attracted over 1850 scientists and graduate students to the city for five days, Satterlie observed, “As you might imagine, a professional meeting with nearly 2000 participants can contribute to the economic engine of any community.” But in 2011, those economic benefits will accrue to Salt Lake City rather than to New Orleans.

Particularly of concern to SICB was the Louisiana Science Education Act — originally introduced as Senate Bill 561, then renamed as Senate Bill 733, and finally enacted as Louisiana Revised Statutes 17:285.1. As NCSE previously reported (see *RNCSE* 2008 Mar/Apr; 28 [2]: 8–11; 2008 Jul/Aug; 28 [4]: 4–10), the law threatens to open the door for creationism and scientifically unwarranted critiques of evolution to be taught in public school science classes. The development of a policy about what types of supplementary classroom materials will, and will not, be allowable under the law was not reassuring, especially when a provision that “[m]aterials that teach creationism or intelligent design or that advance the religious belief that a supernatural being created humankind shall be prohibited for use in science classes” was deleted (see p 5).

Taking note of SICB’s decision, the Louisiana Coalition for Science wrote in a February 13, 2009, press release, “The first tangible results of the Louisiana legislature’s pas-



sage and Gov Bobby Jindal's signing of the 2008 Louisiana Science Education Act have materialized, and these results are negative both for the state's economy and national reputation" (available on-line at <[http://lasciencecoalition.org/docs/Release\\_SICB\\_Boycott\\_2.13.09.pdf](http://lasciencecoalition.org/docs/Release_SICB_Boycott_2.13.09.pdf)>). Observing that Governor Jindal signed the bill over the protests of educators and scientists in Louisiana and nationally, the press release concluded, "The citizens of Louisiana, whose educational well-being the governor claims to be so concerned about, are now paying the price — literally — for his loyalty to his conservative Christian base."

The Louisiana Coalition for Science also noted that SICB may not be the only scientific organization considering taking its business elsewhere. In the August 2008 issue of *ASBMB Today*, Gregory Petsko, the president of the American Society for Biochemistry and Molecular Biology, called for a boycott by scientific organizations of Louisiana and of any state adopting anti-evolution legislation, writing, "As scientists, we need to join such protests with our feet and wallets. ... I think we need to see to it that no future meeting of our society [the ASBMB was already committed to holding its 2009 meeting in New Orleans before the LSEA was enacted] will take place in Louisiana as long as that law stands."

SICB's decision to shun Louisiana was in the headlines, both in Louisiana and nationally. The *New Orleans Times-Picayune* (2009 Feb 16) led its story with, "A national organization of scientists has informed Gov Bobby Jindal it will not hold its annual convention in Louisiana as long as the recently adopted Science Education Act remains on the books," and quoted a spokesperson for Governor Jindal as saying, "That's too bad. ... New Orleans is a first-class city for a convention." In its report, *The New York Times* (2009 Feb 17) quoted Barbara Forrest — a member of NCSE's board of directors as well as a leader of the Louisiana Coalition for Science — on the evasive language of the LSEA: "They're using code language, which is not new ... Creationists have done it for decades."

A spokesperson for the New Orleans Metropolitan Convention and Visitors Bureau told the weekly *New Orleans City Business* (2009 Feb 23) that the city would lose about \$2.7 million as a result of SICB's decision. Barbara Forrest commented, "I've been now writing about this issue for 10 years and I've been involved with it for longer than that, and this is the first time I've ever seen a scientific society really take concrete action against a state that is trying to do something like this." SICB's public affairs committee chairman Peter deFur added, "This is important. Somewhere you have to make a difference. You have to decide where you can and how you can make a stand," and predicted that SICB would not be the only scientific organization to decide to shun Louisiana.

**Massachusetts:** A further setback for Nathaniel Abraham's lawsuit against Woods Hole Oceanographic Institution came on January 22, 2009, when the US Court of Appeals for the First Circuit affirmed a lower court's dismissal of the case for Abraham's failure to file the suit in a timely manner. Abraham filed suit against the research center on November 30, 2007, alleging that his civil rights were violated in his firing from his job for not accepting evolution. While the defendants argued that Abraham failed to file his suit in a timely manner, they were also ready to argue that accepting well-established scientific principles relevant to the grant under which he was hired, including evolution, was implicitly a requirement of employment. (For background, see *RNCSE* 2008 Jan/Feb; 28 [1]: 20–2; 2008 Mar/Apr; 28 [2]: 16–8; 2008 May/Jun; 28 [3]: 5–10.) Abraham is now teaching biology at Liberty University.

**Mississippi:** House Bill 25, introduced in the Mississippi House of Representatives by Representative Gary Chism (R-District 37) on January 6, 2009, and referred to two committees, Education and Judiciary A, would have, if enacted, mandated the state board of education to require every textbook that discusses evolution to include a disclaimer describing evolution as "a contro-

versial theory." In full, the proposed disclaimer read:

The word "theory" has many meanings, including: systematically organized knowledge; abstract reasoning; a speculative idea or plan; or a systematic statement of principles. Scientific theories are based on both observations of the natural world and assumptions about the natural world. They are always subject to change in view of new and confirmed observations.

This textbook discusses evolution, a controversial theory some scientists present as a scientific explanation for the origin of living things. No one was present when life first appeared on earth. Therefore, any statement about life's origins should be considered a theory.

Evolution refers to the unproven belief that random, undirected forces produced living things. There are many topics with unanswered questions about the origin of life which are not mentioned in your textbook, including: the sudden appearance of the major groups of animals in the fossil record (known as the Cambrian Explosion); the lack of new major groups of other living things appearing in the fossil record; the lack of transitional forms of major groups of plants and animals in the fossil record; and the complete and complex set of instructions for building a living body possessed by all living things.

Study hard and keep an open mind.

At present, the only state to require a textbook disclaimer about evolution is Alabama, which is currently using a disclaimer adopted in 2005. The proposed Mississippi disclaimer is evidently a hybrid of two previous versions of the Alabama disclaimer: its first paragraph is modeled on the first paragraph of the second version (adopted in 2001), while much of the remainder is modeled on the first version (adopted in 1995).





In a 1996 lecture at Auburn University, later published in the *Journal of the Alabama Academy of Science* (1997; 68 [1]: 1-16), Richard Dawkins offered a paragraph-by-paragraph analysis of the first version of the Alabama disclaimer, criticizing it as “a study in ignorance and dishonesty.” In 2000, when the state of Oklahoma was considering adopting the first version of the Alabama disclaimer, Kenneth R Miller agreed, concluding, “By any standard, this disclaimer fails even an undemanding test of scientific literacy” (*RNCSE* 2000 May/June; 20 [3]: 30-3).

A textbook disclaimer was at the center of the *Selman v Cobb County* case. Less prolix and less committal than the Alabama disclaimers, the Cobb County disclaimer still insisted that evolution is “a theory, not a fact.” In 2005, the disclaimer was ruled to be unconstitutional and the disclaimers were removed from the textbooks; on appeal, the verdict was vacated and the case was remanded to the trial court. A settlement was reached, in which the Cobb County School District agreed not to make any disclaimers about evolution either orally or in writing.

The *Northeast Mississippi Daily Journal* (2009 Jan 24) quoted the bill’s sponsor Chism as explaining, “Either you believe in the Genesis story, or you believe that a fish walked on the ground,” adding, “All these molecules didn’t come into existence by themselves.” But Chism was pessimistic about the prospects of the bill, telling the conservative Christian on-line news source OneNewsNow (2009 Jan 26; available on-line at <<http://www.one-newsnow.com/Education/Default.aspx?id=398458>>), “I am confident that this bill is ... dead on arrival ... I don’t think the [committee] chairman will even take the bill up.” Chism’s pessimism was evidently justified; HB 25 died in committee on February 3, 2009, according to the state’s legislative website. But he also told OneNewsNow that “he would consider drafting another bill next year supporting the teaching of the strengths and weaknesses of evolutionary theory in public school classrooms.”

**Missouri:** House Bill 656, introduced in the Missouri House of Representatives on February 10, 2009, and not yet referred to a committee, is the latest anti-evolution “academic freedom” bill in Missouri. The bill would, if enacted, call on state and local education administrators to “endeavor to create an environment within public elementary and secondary schools that encourages students to explore scientific questions, learn about scientific evidence, develop critical thinking skills, and respond appropriately and respectfully to differences of opinion about controversial issues, including such subjects as the teaching of biological and chemical evolution,” and to “endeavor to assist teachers to find more effective ways to present the science curriculum where it addresses scientific controversies.” “Toward this end,” the bill continues, “teachers shall be permitted to help students understand, analyze, critique, and review in an objective manner the scientific strengths and scientific weaknesses of theories of biological and chemical evolution.”

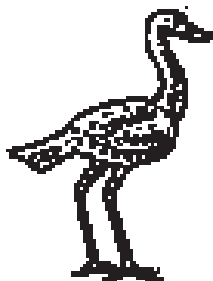
Where a predecessor, HB 2554 from the 2008 legislative session, attempted to immunize itself from the accusation of unconstitutionality by saying, “This section only protects the teaching of scientific information and this section shall not be construed to promote any religious or nonreligious doctrine, promote discrimination for or against a particular set of religious beliefs or non-beliefs, or promote discrimination for or against religion or nonreligion,” however, HB 656 is interestingly specific, saying, “This section only protects the teaching of scientific information and this section shall not be construed to promote philosophical naturalism or biblical theology, promote natural cause or intelligent cause, promote undirected change or purposeful design, promote atheistic or theistic belief, promote discrimination for or against a particular set of religious beliefs or ideas, or promote discrimination for or against religion or nonreligion. Scientific information includes physical evidence and logical inferences based upon evidence.”

The chief sponsor of HB 656 is Robert Wayne Cooper (R-District 155), joined by Mike Sutherland

(R-District 99), Ed Emery (R-District 126), Therese Sander (R-District 22), Brian Nieves (R-District 98), and Stanley Cox (R-District 118). Cooper was the sponsor of numerous failed anti-evolution bills in the past. In 2008, he introduced the similar HB 2554. In 2006, he introduced HB 1266, which if enacted would have required that “If a theory or hypothesis of biological origins is taught, a critical analysis of such theory or hypothesis shall be taught in a substantive amount.” In 2004, he introduced two bills, HB 911 and HB 1722, that called for equal time for “intelligent design” in Missouri’s public schools. HB 911 moreover contained idiosyncratic definitions of various scientific and philosophical terms as well as the draconian provision, “Willful neglect of any elementary or secondary school superintendent, principal, or teacher to observe and carry out the requirements of this section shall be cause for termination of his or her contract.”

**New Mexico:** Senate Bill 433, introduced in the New Mexico Senate on February 2, 2009, and referred to the Senate Education Committee, is the third anti-evolution bill to be introduced in a state legislature in 2009. If enacted, the bill would require schools to allow teachers to inform students “about relevant scientific information regarding either the scientific strengths or scientific weaknesses pertaining to biological evolution or chemical evolution,” protecting teachers who choose to do so from “reassignment, termination, discipline or other discrim[in]ation for doing so.”

The phrase “academic freedom” is not present in the bill, but it is clearly in the mold of the recent spate of anti-evolution “academic freedom” bills. As NCSE’s Glenn Branch and Eugenie C Scott recently wrote in *Scientific American*, “‘Academic freedom’ was the creationist catchphrase of choice in 2008: the Louisiana Science Education Act was in fact born as the Louisiana Academic Freedom Act, and bills invoking the idea were introduced in Alabama, Florida, Michigan, Missouri and South Carolina.” Oklahoma, with its Senate Bill 320, joined the list in 2009.



Although SB 433 explicitly states that it “specifically does not protect the promotion of any religion, religious doctrine or religious belief” and defines “scientific information” as “information derived from observation, experimentation and analyses regarding various aspects of the natural world conducted to determine the nature of or principles behind the aspects being studied,” it also states that “‘scientific information’ may have religious or philosophical implications and still be scientific in nature.”

New Mexicans for Science and Reason quotes a New Mexican anti-evolution organization as taking credit for the bill: “State Senator Steve Komadina helped get the NM Biological Origins Education Bill started, and then he sponsored it in the NM Senate in 2007 [as SB 371]. Unfortunately, he will not be able to sponsor the bill again because he was not reelected, but we really appreciate his initiative. Senator Kent Cravens [R-District 27] has agreed to sponsor the bill in the 2009 session. Let’s support him in getting this legislation through the Senate” (see <<http://www.nmsr.org/leg2009.htm>>).

**Oklahoma:** Senate Bill 320 (see sidebar, left, for the text), pre-filed in the Oklahoma Senate and scheduled for a first reading on February 2, 2009, was apparently the first anti-evolution bill of 2009. Unsurprisingly, it was a further instance of the “academic freedom” strategy for undermining the teaching of evolution. Entitled the “Scientific Education and Academic Freedom Act,” SB 320 would have, if enacted, required state and local educational authorities to “assist teachers to find more effective ways to present the science curriculum where it addresses scientific controversies” and permitted teachers to “help students 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.” The only topics specifically mentioned as controversial were “biological evolution, the chemical origins of life, global warming, and human cloning.”

The sponsor of the Oklahoma

## OKLAHOMA’S SENATE BILL 320

An Act relating to schools; creating the Scientific Education and Academic Freedom Act; providing short title; stating Legislative findings; directing State Board of Education, district boards of education, and certain administrators to create certain environment within schools; permitting teachers to help students understand certain information about scientific theories; disallowing State Board of Education, district boards of education, and certain administrators from prohibiting teachers from helping students understand certain information about scientific theories; providing for evaluation of students based on understanding of course materials; prohibiting penalizing of students for holding certain position on scientific theories; prohibiting certain construction; directing State Department of Education to provide certain notification; directing superintendents to disseminate certain information; providing for codification; providing an effective date; and declaring an emergency.

BE IT ENACTED BY THE PEOPLE OF THE STATE OF OKLAHOMA:

SECTION 1. NEW LAW A new section of law to be codified in the Oklahoma Statutes as Section 27-101 of Title 70, unless there is created a duplication in numbering, reads as follows:

A. This act shall be known and may be cited as the “Scientific Education and Academic Freedom Act”.

B. The Oklahoma Legislature finds that an important purpose of science education is to inform students about scientific evidence and to help students develop critical thinking skills they need in order to become intelligent, productive, and scientifically informed citizens. The Legislature further finds that the teaching of some scientific subjects, such as biological evolution, the chemical origins of life, global warming, and human cloning, can cause controversy, and that some teachers may be unsure of the expectations concerning how they should present information on such subjects.

C. The State Board of Education, district boards of education, district superintendents and administrators, and public school principals and administrators shall endeavor to create an environment within public elementary and secondary schools that encourages students to explore scientific questions, learn about scientific evidence, develop critical thinking skills, and respond appropriately and respectfully to differences of opinion about controversial issues. Such educational authorities in this state shall also endeavor to assist teachers to find more effective ways to present the science curriculum where it addresses scientific controversies. Toward this end, teachers shall be permitted to help students 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.

D. Neither the State Board of Education, nor any district board of education, district superintendent or administrator, or public school principal or administrator shall prohibit any teacher in a school district in this state from helping students 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.

E. Students may be evaluated based upon their understanding of course materials, but no student in any public school or institution shall be penalized in any way because the student may subscribe to a particular position on scientific theories.

F. This act only protects the teaching of scientific information, and this act shall not be construed to promote any religious or non-religious doctrine, promote discrimination for or against a particular set of religious beliefs or non-beliefs, or promote discrimination for or against religion or non-religion. On the contrary, the intent is to create an environment in which both the teacher and students can openly and objectively discuss the facts and observations of science, and the assumptions that underlie their interpretation.

G. By no later than the start of the 2009–2010 school year, the State Department Education shall notify all district superintendents of the provisions of this act. Each superintendent shall then disseminate to all employees within the district a copy of the provisions of this act.

SECTION 2. This act shall become effective July 1, 2009.

SECTION 3. It being immediately necessary for the preservation of the public peace, health and safety, an emergency is hereby declared to exist, by reason whereof this act shall take effect and be in full force from and after its passage and approval.



bill was Randy Brogdon (R-District 34), who was a cosponsor in 2006 of House Concurrent Resolution 1034. If enacted, HCR 1034 would have encouraged “the State Board of Education and local boards of education to revise the recommended academic curriculum content standards in science to ensure that, upon graduation, all students can accomplish the following: 1. Use of [*sic*] the scientific method to critically evaluate scientific theories including, but not limited to, the theory of evolution; and 2. Use relevant scientific data to assess the validity of those theories and to formulate arguments for and against those theories.” HCR 1034 died in committee in May 2006.

Working against SB 320 was Oklahomans for Excellence in Science Education (<<http://www.oklascience.org>>), a non-profit educational organization that promotes the education of the public about the methods and values of science and advocates excellence in the science curriculum. In its critique of the bill (available online at <[http://www.oklascience.org/SB320\\_handout.pdf](http://www.oklascience.org/SB320_handout.pdf)>), OESE argued, “This is a ‘Trojan horse’ bill intended to open the door for the teaching of specific religious concepts in school science classes,” observing that “[p]romoting the notion that there is some *scientific* controversy is just plain dishonest ... Evolution as a process is supported by an enormous and continually growing body of evidence. Evolutionary theory has advanced substantially since Darwin’s time and, despite 150 years of direct research, no evidence in conflict with evolution has ever been found.” With respect to the supposed “weaknesses” of evolution, OESE added, “they are phony fabrications, invented and promoted by people who don’t like evolution.”

SB 320 died in committee on February 16, 2009, according to a report in the *Tulsa World* (2009 Feb 17). The bill’s sponsor Brogdon claimed that the bill was needed because science teachers in his district were confused and fearful about how to address controversial topics, but Owasso Public Schools Superintendent Clark Ogilvie told the newspaper, “I don’t think our teachers are con-

fused at all, and I’m somewhat puzzled because Sen Brogdon and I have never had any dialogue on the subject.” Richard Lerblance (D-District 7), who sits on the Senate Education Committee, called the bill “subterfuge,” adding that it was one of the worst bills he has seen. Lerblance was among the eight members of the committee to vote to kill SB 320; under the rules of the Oklahoma Senate, the measure is dead for two years.

**Canada:** A legislative proposal to honor Darwin failed in Canada. On March 3, 2009, according to the official record of proceedings in the Canadian Parliament, Pierre Paquette (a member of Bloc Québécois who represents Joliette, Québec), said, “Mr Speaker, I seek the unanimous consent of the House to adopt the following motion: That the House acknowledge the 200th anniversary of the birth of Charles Darwin and the 150th anniversary of the publication *On the Origin of Species by Natural Selection or the Preservation of Favoured Races in the Struggle for Life*, which launched the theory of evolution, the only proven and recognized scientific explanation for the origin of man. I believe you will find unanimous consent for adoption of this motion.”

But Paquette failed to gain unanimous consent for his motion; the *Canadian Press* (2009 Mar 3) reported, “The greatest number of nay sayers appeared to come from the Conservative bench, while most others answered ‘yes’ to the motion.” A blogger for the Canadian newsweekly *Maclean’s* suggested, however, that it would be a mistake to assume that the naysayers were ideologically motivated: “[I] was chatting with a Tory staffer who shall remain nameless who pointed out that caucus members are instructed to deny consent to any motion for unanimous consent put forward by an opposition MP, regardless of the content, unless the fact that there is all party agreement is stated up front.” (See <<http://www2.macleans.ca/2009/03/04/update-about-those-darwin-day-deniers-in-the-house/>>.)

Biochemist Larry Moran of the University of Toronto commented on his blog (<[\[blogspot.com/2009/03/canadian-parliament-rejects-theory-of.html\]\(http://blogspot.com/2009/03/canadian-parliament-rejects-theory-of.html\)>\):](http://sandwalk.</a></p></div><div data-bbox=)

I’m a little bit uneasy about the scientific accuracy of the statement but that’s not my main objection. My main objection is that the House of Commons should not be voting on motions concerning the accuracy of scientific theories. That’s none of their business. The motion should have read ... that the House acknowledge the 200th anniversary of the birth of Charles Darwin and the 150th anniversary of the publication of *On the Origin of Species*.

**The Netherlands:** In the bicentennial year of Darwin’s birth, creationists in the Netherlands are launching a national offensive against evolution. As detailed on their website (<<http://www.creatie.info>>), they planned to deliver a brochure entitled “Evolution or creation — What do you believe?” to over six million Dutch households in early February 2009; if money permits, they will extend the campaign into Belgium. The website is coy about the organizations which are sponsoring the effort, but the campaign is reportedly championed and largely financed by Johan Huibers, a wealthy contractor who made the news in 2007 when he completed the construction in the town of Schagen of a floating, fifth-scale Noah’s Ark filled with model animals, Bible-themed computer kiosks, and a movie theater and cafeteria (BBC News 2007 Apr 29). In response to the campaign, Coen Brummer began to distribute stickers saying “Nee Creationisme — Ja Darwin” (that is, no creationism, yes Darwin) through his website (<<http://www.neecreationisme-jadarwin.nl>>); the stickers are designed to resemble official stickers forbidding junk mail. Brummer’s campaign is supported by the Center for Inquiry’s new Low Countries Chapter, the Dutch Humanist Association, the Dutch Institute for Biology, and a large number of individual scientists, philosophers, and theologians.



# NCSE NEWS

News from the Membership

Glenn Branch

From time to time we like to report on what our members are doing. As the following list shows, they — and we — have a lot to be proud about!

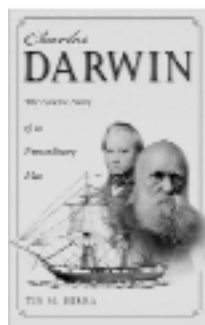
Members of NCSE who were elected Fellows of the American Association for the Advancement of Science in November 2008 include **Susan C Anton** of New York University; **Jeffrey K McKee** of the Ohio State University; **H Jane Brockman** of the University of Florida; **Daphne J Fairbairn** of the University of California, Riverside; **Timothy A Mousseau** of the University of South Carolina; **Craig S Pikaard** of Washington University, St Louis; **Michael W Klymkowsky** of the University of Colorado, Boulder; **Mike U Smith** of Mercer University School of Medicine; and **Dawn J Wright** of Oregon State University. The AAAS writes, “These individuals will be recognized for their contributions to science and technology at the Fellows Forum to be held on 14 February 2009 during the AAAS Annual Meeting in Chicago. The new Fellows will receive a certificate and a blue and gold rosette as a symbol of their distinguished accomplishments.” (Let the NCSE office know if we overlooked your name on AAAS’s list!)

**Tim M Berra** is having a busy year! His new book *Charles Darwin: The Concise Story of an Extraordinary Man* (Baltimore: Johns Hopkins University Press, 2009) was published. *Library Journal*’s reviewer writes:

This succinct biography spans Darwin’s life in 15 brief chapters and reads like a museum guide, hitting the high points in an easily assimilated style. The copious illustrations, though, including reproductions of period paintings, title page facsimiles, and many of the author’s own photographs,

are worth poring over and may hold readers’ attention longer than it takes to peruse the text. Patrons who want a quick, no-frills but still authoritative read on Darwin’s life couldn’t find a better source.

He gave a series of talks about Darwin, including ones at New College in Sarasota, Florida, on February 4, 2009, at Eastern Illinois University on February 8, 2009, and in Belleville, Ohio, on March 14, 2009. He was interviewed about,



and wrote a special column, on Darwin’s life and work for the Mansfield, Ohio, *News Journal* (2009 Feb 15). And he contributed “Charles Darwin’s paradigm shift” to *The Beagle: The Journal of the Museums and Art Galleries of the Northern Territory* (2008; 24: 1–5); the text of his article will also serve as a brochure for the museum’s bicentennial Darwin exhibit — staged, of course, in the Australian city named for Darwin. Professor Emeritus of Evolution, Ecology, and Organismal Biology at the Ohio State University, Mansfield, Berra is also the author of *Evolution and the Myth of Creationism* (Stanford [CA]: Stanford University Press, 1990).

NCSE’s deputy director **Glenn Branch** answered the question “Should creationism be taught in the public schools?” for the on-line edition of *US News & World Report* (2009 Feb 2; available on-line at <<http://www.usnews.com/articles/opinion/2009/02/02/intelligent-design-is-not-science-and-should-not-take-the-place-of-evolution-in-the-classroom.html>>) — in the neg-

ative, of course. After reviewing the legal history of attempts to require the teaching of creationism in the public schools, he observed, “Creationism is not just a legal failure. It is a scientific failure as well. Scan the scientific research literature: There are no signs that anyone is using creationism, whether as creation science or its newfangled form of ‘intelligent design’, to explain the natural world. In contrast, not a year passes without the appearance of thousands of scientific publications that apply, refine, and extend evolution.” Despite those failures, creationism persists. Branch explained, “Defeated in court and unable to make their mark in science, creationists have increasingly turned to the fallback strategy of attacking evolution without mentioning any specific creationist alternative,” citing recent legislation in Louisiana, Oklahoma, and Mississippi as well as struggles over the treatment of evolution in state science standards in Kansas, Ohio, and Texas. Additionally, he commented, “creationism contributes to a climate of hostility toward, skepticism about, and ignorance of evolution — and, indeed, science — in America. ... The sad consequence is students cheated of a chance to attain a proper understanding of the central principle of the biological sciences.”

NCSE deputy director **Glenn Branch** contributed a review of a new edition of William Paley’s *Natural Theology* (New York: Oxford University Press, 2006) to the Australian philosophy journal *Sophia* (2009; 48: 99–101), saying that it “deserves to become the standard scholarly edition of what is a historically, theologically, and philosophically important work, despite a certain neglect of philosophical issues on the part of the editors.” He ended his review by commenting, “whereas Paley was not guilty of misrepresenting the established science of his day to extract his theological conclusions, the proponents of ‘intelligent design’ are, as **Barbara Forrest** and **Paul R Gross** thoroughly document in their *Creationism’s Trojan Horse*, not similarly operating in good faith.” Branch also contributed a review

of Karl Giberson's *Saving Darwin: How to Be a Christian and Believe in Evolution* (New York: HarperOne, 2008; see review by **Denis O Lamoureux** on p 40) to *Skeptical Inquirer* (2009; 33 [1]: 51-2), saying, "anyone seeking a lively and engaging, if occasionally tendentious, introduction to the evolution wars from the standpoint of a Christian who accepts evolution will enjoy *Saving Darwin*." Also of interest in the same issue of *Skeptical Inquirer* are editor Kendrick Frazier's column wishing a happy birthday to Darwin (4), a report on a speech by Judge John E Jones III at the Ohio State University (5-6), a report on a creationist campaign in the Low Countries (7), Massimo Pigliucci's column on "The tree of life" (20-1), and a review of Neil Shubin's *Your Inner Fish* (52-3). Copies of both of Branch's reviews are available from the NCSE office.

NCSE's **Glenn Branch** and **Eugenie C Scott** discussed the newest mutations of the anti-evolutionist movement in "The latest face of creationism," their contribution to the January 2009 issue of *Scientific American*, which took as its theme "The Evolution of Evolution: How Darwin's Theory Survives, Thrives and Reshapes the World." Branch and Scott explained that "creationists are increasingly retreating to their standard fallback strategy for undermining the teaching of evolution: misrepresenting evolution as scientifically controversial while remaining silent about what they regard as the alternative. ... Creationism's latest face is just like its earlier face, only now thinly disguised with a fake mustache." But the effects of their efforts are as pernicious as ever: "Telling students that evolution is a theory in crisis is — to be blunt — a lie." Also featured were David J Buller on "Evolution of the mind," H Allen Orr on "Testing natural selection with genetics," David M Kingsley on "Diversity revealed: From atoms to traits," Ed Regis on "The science of Spore," Neil H Shubin on "The evolutionary origins of hiccups and hernias," **Peter Ward** on "The future of man — How will evolution change humans?" and **David P Mindell** on "Putting evolution to use in the everyday world." The staff of

*Scientific American* contributed to the issue as well, with Gary Stix introducing "Darwin's living legacy — Evolutionary theory 150 years later," Kate Wong reviewing "The human pedigree," and the editors explaining "Why everyone should learn the theory of evolution" — "Darwin's legacy has a direct bearing on how society makes public policy and even, at times, on how we choose to run our lives," they commented.

**Ed Brayton** gave the keynote address at the Michigan Atheists State Convention on December 6, 2008, in Ann Arbor. According to the *Lansing City Pulse* (2008 Dec 17), "To kick off the convention, Ed Brayton, president of Michigan Citizens for Science, treated the unfaithful to a prickly defense of the American Civil Liberties Union. ... He told the group that long-standing legislative efforts to put creationism into the state's science curriculum were quiet for now, owing to a 2006 change in committee chairmanships and an enlightened school board. Only a few of those present were ACLU members, but Brayton's talk dovetailed with the Michigan Atheists' statement of purpose, summarized as 'defending atheists' civil rights' and 'the complete and absolute separation of state and church,' according to a newsletter distributed to members." In addition to serving as president of Michigan Citizens for Science, Brayton is also a blogger at <<http://scienceblogs.com/dispatches/>>, a Fellow with the Center for Independent Media, and the host of Declaring Independence, a one-hour weekly political talk show on WPRR in Grand Rapids, Michigan.

**Gregory A Clark** wrote to the *Salt Lake Tribune* to clarify a few points in its February 14, 2009, coverage of evolution and the Darwin bicentennial, explaining, "First, *The Tribune* perpetuates the erroneous claim that intelligent design is a 'new, more rigorous critique of evolution' ... Instead, as the *Kitzmiller v Dover*, Penn., trial convincingly demonstrated, intelligent design is just creationism repackaged; it is not science," and "*The Tribune* headlined evolution as 'a theory still in controversy.' Importantly, the controversy is a

religious, not scientific, one. Current calls to 'teach the controversy' in public science curricula are misleading and misdirected." His letter appeared on February 24, 2009. Clark is a professor in the University of Utah's Department of Bioengineering.

In honor of the Darwin bicentennial, **Daryl Domning** led a seven-week series of two-hour adult education seminars, from January 4 to February 15, 2009, on "Evolution, creation, and original sin: Why we have evil in the world" at his parish (St Camillus Catholic Church in Silver Spring, Maryland), which earned the parish a place on The Clergy Letter Project's list of Evolution Weekend 2009 participants. The discussion guide used was Domning and Wimmer's *Evolution and Original Sin: Accounting for Evil in the World* (available on-line at <<http://www.congregationalresources.org/EvolutionOriginalSin/About.asp>>); co-author Father Joseph Wimmer of the Washington Theological Union was guest leader for one of the sessions. Despite the fact that over half of the time was devoted to presenting pure biology, an enthusiastic group averaging over thirteen people stuck with the course throughout — a gratifying turnout in a parish where that many people rarely show up for even a one-time adult education event. The attendees included several scientists and other professionals, and the discussions were well-informed, lively, and enjoyable. By the end, there was general agreement that evolutionary science is (in John F Haught's words) "Darwin's gift to theology." Domning is a paleontologist at Howard University specializing in sirenian evolution; his book *Original Selfishness: Original Sin and Evil in the Light of Evolution* (written with the late Monika K Hellwig) was published by Ashgate in 2006.

**Wesley Elsberry** and Diane Blackwood led three roundtable discussions on "Why does my neighbor hate evolution?" for a recent in-service day at Lansing Community College. On his blog (<<http://austringer.net/wp/index.php/2009/01/08/why-your-neighbor-hates-evolution/>>),

*continued on page 27*

# Revisiting the Creation/Evolution Continuum

Many people think of the creationism/evolution controversy as a dichotomy with “creationists” on one side and “evolutionists” on the other.

This assumption all too often leads to the unfortunate inference that because creationists are believers in God, evolutionists must be atheists. The true situation is much more complicated: creationism comes in many forms, not all of which reject evolution. The Creation/Evolution Continuum here shows the many intermediate positions between the extremes. NCSE's executive director Eugenie C.

Scott explores this continuum in chapter 3 of her recent book, *Evolution vs Creationism: An Introduction*, 2nd ed. (Westport [CT]: Greenwood Press, 2009; a paperback version is forthcoming from the University of California Press). The essay from which the following is condensed and the accompanying graphic are also available at <<http://ncseweb.org/creationism/general/creationevolution-continuum>>.

## Flat Earthism

Those who support Flat Earthism seriously contend that the shape of the earth is flat rather than spherical because many passages in the Bible imply that God created an earth that is shaped like a coin, not a ball: flat and round at the edges. Few other biblical literalists hold to such stringent interpretations of the Bible and hold so much of modern geology, physics, biology, and astronomy to be in error.

## Geocentrism

Geocentrists accept that the earth is a sphere, but place it in the center of the universe. They reject virtually all of modern science. Geocentrism reflects the idea that the earth and its creatures — especially humans — are central to God. To symbolize this importance, God would have made the earth the center of the universe.

## Young-Earth Creationism

Young-earth creationists (YECs) accept heliocentrism but reject the conclusions of modern science concerning the age of the earth, and deny biological descent with modification. The earth, in their view, is between 6000 and 10 000 years old. YECs embrace the special creation of separate “kinds” of plants and animals, as stated in Genesis, and view the basic body plans of major phyla that appear in the Cambrian explosion as evidence of special creation.

## Old-Earth Creationism

From the mid-1700s on, the theology of special creationism has been partly harmonized with scientific data and theory showing that earth is ancient. To many Christians, the most critical element of special creation is God's personal involvement in creation. There are several religious views that can be classed as OEC.

### GAP CREATIONISM

A 19th-century accommodation, gap creationism assumes a pre-Adamic creation that was destroyed before Genesis 1:2, when God re-created the world in six days. A time gap between two separate creations allows for an ancient earth.

### DAY-AGE CREATIONISM

Another 19th-century accommodation to science by biblical literalists, day-age creationism holds that the six “days” of creation do not last 24 hours but could be thousands or millions of years. This allows for recognition of an ancient age of the earth but still retains a quite literal interpretation of Genesis.

### PROGRESSIVE CREATIONISM

Progressive creationism (PC) is the view held by the majority of today's OECs. As in other forms of old-earth creationism, modern physical science theories are accepted, while only parts of modern biological science are. To PCs, the geological column reflects history, but as with YECs, a kind is viewed as genetically limited: as a result, one kind cannot change into another.

## EVOLUTIONARY CREATIONISM

In evolutionary creationism (EC), God the Creator uses evolution to bring about the universe. From a scientific point of view, evolutionary creationism is hardly distinguishable from theistic evolution. The differences lie in theology: EC views God as being more actively involved in evolution than theistic evolution.

## INTELLIGENT DESIGN CREATIONISM

Intelligent design creationism (IDC) is the newest manifestation of American creationism, and yet in most ways, IDC is a descendant of William Paley's argument from design. IDC proponents accept natural selection but deny that mutation and natural selection are adequate to explain the evolution of one “kind” to another — such as humans and chimps from a common ancestor. The emergence of major anatomical body types and the origin of life

are events supposedly too complex to be explained naturally; thus, IDC demands that a role be left for the intelligent designer — God.

## Theistic Evolution

Theistic evolution is a theological view in which God creates through the laws of nature. Theistic evolutionists (TEs) accept all the results of modern science, in anthropology and biology as well as in astronomy, physics, and geology. In particular, it

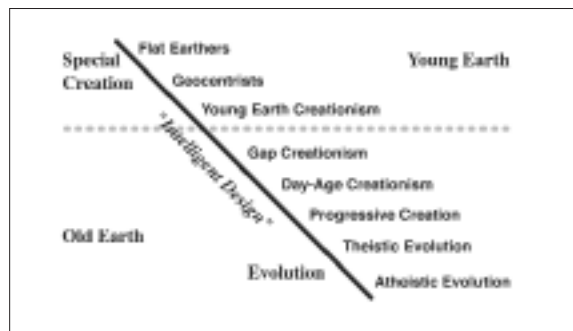
is acceptable to TEs that one species give rise to another; they accept descent with modification. Some believe that God created the laws of nature and allows events to occur with no further intervention. Others believe that God intervenes at critical intervals during the history of life — especially in the origin of humans.

## Agnostic Evolutionism

Agnostics believe that it is impossible to know truly whether there is a God. Agnostic evolutionists do not categorically rule out the involvement of God, and although they believe that it is not probable that God exists, they tend not to be dogmatic about this conclusion. All accept the scientific evidence that evolution occurred, but many do not consider the question of whether God's involvement important.

## Materialist Evolutionism

Someone holding to materialist evolutionism believes that evolution occurred but without any supernatural entities or forces affecting it. Creationists consider materialist evolutionism the true enemy of religion. However, although all materialist evolutionists reject the involvement of God in evolution, not all materialist evolutionists are antireligious. Agnostics are materialists who do not consider that the question of whether God created can be answered. Humanists have a philosophy of life and an ethical code that focuses on human responsibility without reference to the supernatural. Atheists reject the existence of God but also tend to be more actively antireligious than the other two.





# SCIENCE AND RELIGION REDUX

"Enemies, strangers, or partners?" — the subtitle of Ian G Barbour's *When Science Meets Religion* (San Francisco: HarperSanFrancisco, 2000) — suggests the basic options for science and religion. Yet their vexed relationship continues to fascinate, if the continuing spate of books on the topic is any indication. Featured here are books on science and religion — especially the interface between the evolutionary sciences and Christianity — from authors who write from a variety of perspectives: as scholars and historians, as Christians, as evangelical Christians in particular, and as agnostics and atheists. Indeed, beyond accepting the methods and results of modern science, perhaps the only conviction they share is that it is important to think about the issues carefully. So for insights on science and religion, consult the following books, now available through the NCSE web site: <<http://ncseweb.org/store>> — look in the "In the latest RNCSE" section. And remember, every purchase benefits NCSE!



Illustration by Dave Smith, used with permission of the University of California Museum of Paleontology.

## HANDBOOKS AND HISTORIES

### *The Oxford Handbook of Religion and Science*

edited by Philip Clayton

A hefty companion to a burgeoning academic field, *The Oxford Handbook of Religion and Science* includes sections on Religion and Science Across the World's Traditions, Conceiving Religion in Light of the Contemporary Sciences, The Major Fields of Religion/Science, Methodological Approaches to the Study of Religion and Science, Central Theoretical Debates in Religion and Science (including a section on Evolution, Creation, and Belief in God, with contributions by William B Provine, Alister E McGrath, and John F Haught, and a section on Intelligent Design, with contributions by William A Dembski and Robert T Pennock), and Values Issues in Religion and Science.

### *Science and Religion: A Very Short Introduction*

by Thomas Dixon

At a scant 144 pages, *Science and Religion* certainly fits in the Very Short Introduction series. Yet Thomas Dixon, a historian of science and religion at Queen Mary, University of London, manages to cram a lot of information and analysis in the scope of his brief book, including discussions of the

controversies surrounding evolution, from Darwin through Scopes to Kitzmiller. "It is no part of my aim ... to persuade people to stop disagreeing with each other about science and religion — far from it," Dixon explains. "My hope is only that it might help people to disagree with each other in a well-informed way."

### *When Science and Christianity Meet*

edited by David C Lindberg and Ronald L Numbers

A collection of historical case studies on conflict and cooperation between Christianity and science, edited by two leading historians of science, *When Science and Christianity Meet* includes a number of important articles relevant to the creationism/evolution controversy, such as David N Livingstone's "Re-placing Darwinism and Christianity," Edward J Larson's "The Scopes trial in history," and Ronald L Numbers's "Science without God: Natural laws and Christian beliefs." Reviewing the book for *Isis*, the historian of biology Peter J Bowler wrote, "Taken together, these papers provide a comprehensive survey of current thinking on key issues in the relationships between science and religion."

## CHRISTIAN PERSPECTIVES

### *The Evolution Dialogues*

by Catherine Baker

Published by the American Association for the Advancement of Science, *The Evolution Dialogues* strives, in the words of its prologue, to correct a host of "deep misunderstandings about what biological evolution is, what science itself is, and what views people of faith, especially Christians, have applied to their interpretations of the science." Rodger Bybee described it as "an excellent, positive contribution to a contemporary understanding of evolution and religion," and John F Haught agreed that it "will prove to be very helpful to teachers and students of biology, especially where questions might arise about the scientific status of Darwin's theory and the religious implications of evolution."

### *Responses to 101 Questions on God and Evolution*

by John F Haught

From the author of *God after Darwin* and *Deeper than Darwin* comes *Responses to 101 Questions on God and Evolution*, which distills his insights in a convenient question-and-answer format. "Too much time and energy is wasted trying to show that evolution is wrong," Haught writes, "when religious believers should



be asking whether our understanding of God is might not be too small to accommodate Darwin's world." Phina Borgeson wrote in *RNCSE*, "for those who want the fruits of reasoned thinking on evolution and Christian theology that may be mined for succinct answers, this is the book of choice." Haught is Landegger Distinguished Professor of Theology at Georgetown University.

### *Can You Believe in God and Evolution?*

by Ted Peters and Martinez Hewlett

The authors of *Evolution from Creation to New Creation* — one a theologian and pastor; one a biologist and philosopher — have again collaborated, producing (in NCSE executive director Eugenie C. Scott's words) "a useful synopsis of their thoughtful reflections on evolution and Christian theology that will be of considerable value to pastors, priests, and other religious professionals who have to wrestle with this contentious issue. Much can be done by the faith community to help resolve the conflict between evolution and (some) Christian religious views, and this book can help point the way to productive solutions."

## EVANGELICAL CHRISTIAN PERSPECTIVES

### *Creation or Evolution: Do We Have to Choose?*

by Denis Alexander

Addressing primarily his fellow evangelicals, Denis Alexander argues, "Personal saving faith through Christ in the God who has brought all things into being and continues to sustain them by his powerful Word, is entirely compatible with the Darwinian theory of evolution which, as a matter of fact, provides the paradigm within which all current biological research is carried out." Francis Collins writes, "Denis Alexander the scientist-believer argues convincingly and lovingly that a committed Christian need not fear evolution, but can embrace it as God's awesome means of creation." The author is the director of the

Faraday Institute for Science and Religion, St Edmund's College, Cambridge University.

### *Saving Darwin*

by Karl Giberson

*Saving Darwin* offers, in the words of the *Washington Post's* reviewer, "two gifts: a cultural history of the anti-Darwin movement that details how its tenets, far from being the traditional doctrine of any church, were developed by a few cranks and fueled by larger, populist fears of secular culture; and an empathetic, comprehensible account of how the world looks if you believe in scientific creationism, as he once did." A professor of physics at Eastern Nazarene University, Karl Giberson is also the coauthor (with Donald A. Yerxa) of *Species of Origins: America's Search for a Creation Story*. (See review on p. 40.)

### *Evolutionary Creation: A Christian Approach to Evolution*

by Denis O. Lamoureux

From the publisher: "In this provocative book, evolutionist and evangelical Christian Denis O. Lamoureux proposes an approach to origins that moves beyond the 'evolution-versus-creation' debate. Arguing for an intimate relationship between the Book of God's Words and the Book of God's Works, he presents evolutionary creation — a position that asserts that the Father, Son, and Holy Spirit created the universe and life through an ordained and sustained evolutionary process. ... Lamoureux closes with the two most important issues in the origins controversy — the pastoral and pedagogical implications. How should churches approach this volatile topic? And what should Christians teach their children about origins?" (See review on p. 46.)

## FOR THE SKEPTIC

### *Science and Nonbelief*

by Taner Edis

A comprehensive look at the interaction between science and religion from the standpoint of non-belief, discussing philosophy, physics, biology, neuroscience, pseudoscience, religion as a social

phenomenon, and morality and politics. "Overall, this is an excellent book for the layman and professional alike. Anyone interested in the subject would find this to be one of the few contemporary books that approaches these controversial issues with more light than heat," wrote the reviewer for *Catholic Book World*. Taner Edis is Associate Professor of Physics at Truman State University, author of *The Ghost in the Universe*, and *RNCSE's* associate editor for physics and astronomy.

### *Science and Religion: Are They Compatible?*

edited by Paul Kurtz

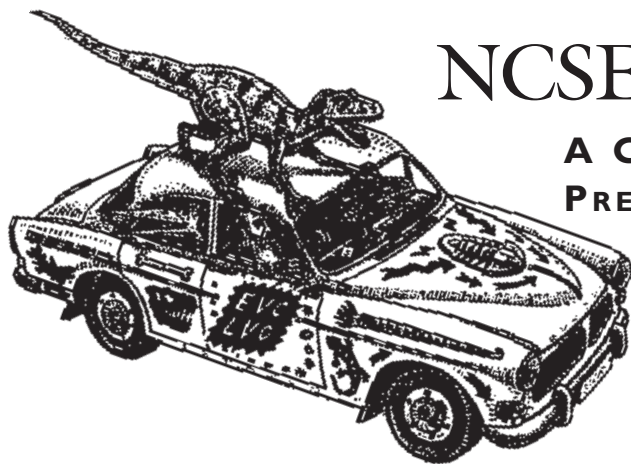
A stimulating collection of essays on science-and-religion topics — including the Big Bang and the origin of the universe, "intelligent design" and creationism versus evolution, the nature of the soul, near-death experiences, communication with the dead, why people believe in God, and the relationship between religion and ethics — by a stellar panel of contributors, including Steven Weinberg, Richard Dawkins, the late Arthur C. Clarke, Martin Gardner, Owen Gingerich, and NCSE's own Eugenie C. Scott. The reviewer for the *Times Literary Supplement* describes it as "strong stuff ... an important counterweight to the accommodationism that has dominated recent discourse."

### *Superstition: Belief in the Age of Science*

by Robert L. Park

From the publisher: "Park sides with the forces of reason in a world of continuing and, he fears, increasing superstition. Chapter by chapter, he explains how people too easily mistake pseudoscience for science. He discusses parapsychology, homeopathy, and acupuncture; he questions the existence of souls, the foundations of intelligent design, and the power of prayer; he asks for evidence of reincarnation and astral projections; and he challenges the idea of heaven. Throughout, he demonstrates how people's blind faith, and their confidence in suspect phenomena and remedies, are manipulated for political ends. Park shows that science prevails when people stop fooling themselves."





# NCSE on the Road

**A CALENDAR OF SPECIAL EVENTS,  
PRESENTATIONS, AND LECTURES**

**DATE** June 25, 2009  
**CITY** Cincinnati OH  
**PRESENTER** Eugenie C Scott  
**TITLE** Strategies for Defending Evolution Education  
**EVENT** North American Paleontological Convention  
**TIME** 9:00 AM  
**LOCATION** University of Cincinnati  
**CONTACT** scott@ncseweb.org

**DATE** June 25, 2009  
**CITY** Cincinnati OH  
**PRESENTER** Andrew J Petto  
**TITLE** Teaching and Learning About the History and Diversity of Life  
**EVENT** North American Paleontological Convention  
**TIME** 1:30 PM  
**LOCATION** University of Cincinnati  
**CONTACT** ajpetto@uwm.edu

**DATE** September 17, 2009  
**CITY** Provo UT  
**PRESENTER** Eugenie C Scott  
**TITLE** What Will the Creationists Do Next?  
**EVENT** Jeffery Lecture Series in Evolution Education  
**TIME** 11:00 AM  
**LOCATION** Brigham Young University  
**CONTACT** Jerald D Johnson, jerry.johnson@byu.edu

## AMONG AVAILABLE NCSE SPEAKERS

**NAME** Eugenie C Scott  
**TITLE** NCSE Executive Director

**NAME** Kevin Padian  
**TITLE** President, NCSE Board of Directors

**NAME** Barbara Forrest  
**TITLE** NCSE Board Member

**NAME** Andrew J Petto  
**TITLE** NCSE Board Member

**NAME** Glenn Branch  
**TITLE** NCSE Deputy Director

**NAME** Peter MJ Hess  
**TITLE** NCSE Faith Project Director

**NAME** Louise S Mead  
**TITLE** NCSE Education Project Director

**NAME** Steven Newton  
**TITLE** NCSE Public Information Project Director

**NAME** Joshua Rosenau  
**TITLE** NCSE Public Information Project Director

*Check the NCSE web site for updates and details — <<http://www.ncseweb.org/meeting.asp>>.*

## JOIN US AT THE NATIONAL CENTER FOR SCIENCE EDUCATION

**MEMBERSHIP IN NCSE BRINGS YOU:**

- 6 issues of *Reports of the National Center for Science Education*
- Participation in NCSE's efforts to promote and defend integrity in science education

### MEMBERSHIP INFORMATION

Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
 e-mail \_\_\_\_\_ Telephone \_\_\_\_\_ Fax \_\_\_\_\_

Occupation (Optional)

☐ Check here if you do not want NCSE to share your name and address with other organizations

☐ Check here if NCSE may share your name with activists in your state

☐ Check (US dollars) ☐ Charge to: ☐ VISA ☐ MasterCard ☐ AmEx

Credit card number \_\_\_\_\_ Expiration Date \_\_\_\_\_

Name as it appears on card \_\_\_\_\_ Signature \_\_\_\_\_

### NCSE MEMBERSHIP

☐ One Year US: \$30 Foreign Air: \$39  
☐ Lifetime \$600

Tax Deductible Contribution to NCSE \_\_\_\_\_

**TOTAL** \_\_\_\_\_



Elsberry related, “The reason explaining most of the phenomena of the title, Diane and I explained, was commitment to a particular religious doctrine that put it at odds with the findings of evolutionary science and various other disciplines. And within that, most cases are explained by adherence to young-earth creationism, saying that the earth must be 20 000 years old or less.” Formerly Information Project Director at NCSE, Elsberry is currently a post-doctoral scholar at Michigan State University.

**Barbara Forrest** explained “Why Texans shouldn’t let creationists mess with science education” on November 11, 2008, at Southern Methodist University in Dallas. Now video and audio of her talk is available on-line at <<http://smu.edu/flashvideo/?id=248>> and <<http://smu.edu/news-info/audio/barbara-forrest-11nov2008.mp3>>. The talk was sponsored by the Texas Freedom Network Education Fund, and the Annette Caldwell Simmons School of Education and Human Development, the Center for Teaching Excellence, the Department of Anthropology, the Department of Biological Sciences, and the Department of Philosophy in the Dedman College of Humanities and Sciences at Southern Methodist University. Forrest is a professor of philosophy at Southeastern Louisiana University; she is also a member of NCSE’s board of directors. She coauthored (with **Paul R Gross**) *Creationism’s Trojan Horse* (revised edition, New York: Oxford University Press, 2007). She also testified for the plaintiffs in *Kitzmiller v Dover*, and Judge Jones wrote in his ruling, “Barbara Forrest ... has thoroughly and exhaustively chronicled the history of ID in her book and other writings for her testimony in this case. Her testimony, and the exhibits ... admitted with it, provide a wealth of statements by ID leaders that reveal ID’s religious, philosophical, and cultural content.”

**Paul R Gross** reviewed David Berlinski’s *The Devil’s Delusion: Atheism and its Scientific Pretensions* for *Free Inquiry*

(2008/2009 Dec/Jan; 29 [1]: 57–60): a “book-length joust with science,” he called it. Among his criticisms were Berlinski’s complete neglect of the life sciences: “Not just evolution — the strongest worldview-shaker since Copernicus — of which Berlinski is of course a career denier. *Biology* is absent” (emphasis in original). Gross added, “Berlinski insists he is not an advocate of [‘intelligent design’]. He just rejects anything evolutionary biologists deduce from their work about religion. The Discovery Institute, ID epicenter, supports Berlinski, as he acknowledges. It must be because they, too, have no evidence *for* ID, but they value any argument *against* science.” Gross is the University Professor of Life Sciences Emeritus at the University of Virginia; he coauthored *Creationism’s Trojan Horse* (revised edition, New York: Oxford University Press, 2007) with **Barbara Forrest**. Also of interest in the same issue are DJ Grothe’s interview (11) with Michael Dowd, the author of *Thank God for Evolution* (reviewed in *RNCSE* 2007 Jan–Apr; 27 [1–2]: 52–3), and **Gregory S Paul**’s “The big religion questions finally solved” (24–36).

**Michael W Klymkowsky** and Erin M Furtak contributed “How the incoherent state of science and mathematics education undermines biological (and scientific) literacy” to *Colorado Higher Education News* (available on-line at <<http://coloradohigherednews.com/Pages/Opinions.php>>). Noting that even in the sesquicentennial year of the *Origin of Species* “the role of random processes in evolution appears to remain a mystery to high school and college students, many of their teachers, and as a result much of the general public,” they argue:

the manner in which evolution is presented in the popular media is a contributing factor, as is the extent to which the topic of evolution has been de-emphasized in US school curricula as compared to that of other industrialized nations. However, we argue that the situation has deeper origins that, while

troubling, also suggest solutions. In particular, we note the difficulties teacher preparation programs face when tasked with developing science and mathematics teachers’ abilities to employ teaching strategies proven to impact student learning. Even fewer teacher education courses focus specifically on the differences between how different sciences should be taught, and even these content-specific courses rarely address the knowledge base required for teaching (and learning) physics, chemistry, or biology.

Klymkowsky is co-director of CU Teach — Colorado’s premier secondary mathematics and science teacher education program — and Professor of Molecular, Cellular, and Developmental Biology at the University of Colorado, Boulder.

**Kenneth R Miller** was named as the winner of the 2008 Award for Public Understanding of Science and Technology by the American Association for the Advancement of Science in recognition of “his sustained efforts and excellence in communicating evolutionary science,” according to a February 11, 2009, press release. He received the award during a February 14 ceremony at the 2009 AAAS Annual Meeting in Chicago. A Supporter of NCSE who testified for the plaintiffs in the *Kitzmiller v Dover* trial, Miller “made an extraordinarily persuasive public case for the power of science in general, and the validity of evolution in particular, to explain the natural world,” AAAS reported in announcing the award. “He did the scientific community an immeasurable service” by helping to uphold the integrity of US science education. Miller is Professor of Biology and Royce Family Professor for Teaching Excellence at Brown University, coauthor of the most widely used high school biology textbook in the country, and author, most recently, of *Only a Theory: Evolution and the Battle for America’s Soul* (New York: Viking, 2008).

A few members of NCSE contributed to *Skeptical Inquirer’s*

special issue (2009 Jan/Feb; 33 [1]) on “The new UFO interest: Scientific appraisals”: NCSE Supporter **David Morrison** discussed “UFOs and aliens in space” (30–4), **Dave Thomas** offered “Roswell update: Fading star?” (52–3), and **Andrew Fraknoi** contributed “An astronomer looks at UFOs: A lot less than meets the eye” (54).

**Kevin Padian**, who serves as president of NCSE’s board of directors, is continuing to speak and write in enthusiastic defense of the teaching of evolution. To inaugurate Evolution ‘09, San Francisco’s celebration of the bicentennial of Darwin’s birth and the sesquicentennial of the publication of the *Origin of Species*, Padian spent about sixty minutes in a spirited and lively discussion of evolution and religion with Alan Jones, the dean of Grace Cathedral in San Francisco, on November 22, 2008. Video of a similar event, held on November 4, 2007, is available online from Fora.tv at <[http://fora.tv/2007/11/04/Kevin\\_Padian\\_Investigating\\_Evolution](http://fora.tv/2007/11/04/Kevin_Padian_Investigating_Evolution)>. Then, discussing the challenge of educating the public about evolution, Padian suggested that scientists need to talk about the major transitions in evolution — his specialty as a vertebrate paleontologist — “faster, harder, and more often.” For specifics, see his commentary in the February 2008 issue of *Geotimes* and his article in *Integrative and Comparative Biology* 2008; 48 (2): 175–88.

Additionally, Padian discussed “The evolution of creationists in the United States: Where are they now, and where are they going?” in a forthcoming paper in *Comptes Rendus Biologies*, the proceedings of the French Academy of Sciences for life sciences. There he writes:

As evolutionary biology in all its forms continues to bring forth amazing new insights from the origin of whales to the evolution of microbial resistance, one would think that the anti-evolutionists would have less to cling to each year, and that they would give up their arguments as disproven misapprehensions. They will not,

despite recent victories against ID as science and the lunacy of “creation science”. Creationists reject the notion of a rational universe because they believe that evolution depends upon the dominance of “random processes” that allow no divine direction or teleological goal. This is the core of the resistance to evolution in America, and it will not go away anytime soon.

Padian also reviewed Neil F Shubin’s *Your Inner Fish* (New York: Pantheon, 2008) for *The Quarterly Review of Biology* (2008; 8 [3]: 305–6), writing, “I think this is an essential popular book in many respects. In a conversational, frequently humorous tone, Shubin lays out the evolutionary history of many of the structures, functions, and behaviors of the human body. Human anatomy makes more sense if taught with an evolutionary perspective, so that students can understand why human reproductive organs are as tortuously plumbed as they are, why males get hernias more readily than females, and why we have crummy knees. And it is a fortunate circumstance of history that so many medical school anatomy instructors, such as Shubin, are paleobiologists trained in comparative morphology and evolution of vertebrates, whether or not their students are interested in their ravings about fossils.”

In addition to serving as president of NCSE’s board of directors, Padian is Professor of Integrative Biology at the University of California at Berkeley and also Curator of Paleontology at the University of California’s Museum of Paleontology. He recently received the 2008 Western Evolutionary Biologist of the Year award from the Network for Experimental Research on Evolution. He testified for the plaintiffs in *Kitzmiller v Dover*, the 2005 case establishing the unconstitutionality of teaching “intelligent design” in the public schools. In his decision, Judge John E Jones III wrote, “Padian’s demonstrative slides, prepared on the

basis of peer-review[ed] scientific literature, illustrate how Pandas systematically distorts and misrepresents established, important evolutionary principles.” He also noted that “Padian bluntly and effectively stated that in confusing students about science generally and evolution in particular, the disclaimer makes students ‘stupid.’”

**Mark Perakh** contributed “Flagella myths: How Intelligent Design proponents created the myth that bacteria[l] flagella look like man-made machines” to *Skeptic* (2008; 14 [3]: 20–3), noting that proponents of “intelligent design” use stylized images of flagella that have “the artificial look of a man-made machine” even though accurate images that display “convoluted garlands of protein molecules” are available, and asking: “could it be that they are less interested in facts and truth and more focused on winning the ‘cultural wars by any means?’” Perakh is the author of *Unintelligent Design* (Amherst [NY]: Prometheus Books, 2004; reviewed by **Jason Rosenhouse** in *RNCSE* 2004 May–Aug; 24 [3–4]: 49–50) and a frequent contributor to the Panda’s Thumb blog (<<http://www.pandasthumb.org>>) and the TalkReason website (<<http://www.talkreason.org>>). Of interest in the same issue of *Skeptic* are Massimo Pigliucci’s “The evolutionary 16,” discussing a recent meeting of evolutionary biologists and a rogue journalist’s attempt to spin it as a conspiracy (10–2); Ralph M Barnes, Lesleh E Keilholtz, and Audrey L Alberstadt’s report on a survey on “Creationism and evolution beliefs among college students” (13–6); a response by Michael Dowd, author of *Thank God for Evolution* (reviewed in *RNCSE* 2007 Jan–Apr; 27 [1–2]: 52–3), to a review of his book in a previous issue of *Skeptic* (19); Martin Rundkvist’s review of Garrett G Fagan’s collection *Archaeological Fantasies: How Pseudoarchaeology Misrepresents the Past and Misleads the Public* (69–70); **Paul R Gross**’s review of **Lauri Lebo**’s *The Devil in Dover: An Insider’s Story of Dogma v Darwin in Small-town America* (72–6; published on-line at <<http://www.skeptic.com/eskeptic/08-07->



16.html>); and **Donald R Prothero's** review of Barrett Brown and **Jon P Alston's** *Flock of Dodos: Behind Modern Creationism, Intelligent Design, and the Easter Bunny* (76–8).

Included in a recent issue of *Evolution: Education and Outreach* (2008; 1 [4]: 505–8; available on-line at <<http://www.springerlink.com/content/a7v3307m37236637/fulltext.html>>) was the fourth installment of NCSE's regular column for the journal, Overcoming Obstacles to Evolution Education. In their article "Misconceptions about the evolution of complexity," **Andrew J Petto** (editor of *RNCSE* and a member of NCSE's board of directors) and NCSE's **Louise S Mead** take the vertebrate eye as their example, since "the complexity of vertebrate eyes is a common anti-evolution argument." In the abstract, they summarized:

Despite data and theory from comparative anatomy, embryology, molecular biology, genomics, and evolutionary developmental biology, anti-evolutionists continue to present the eye as an example of a structure too complex to have evolved. They stress what we have yet to explain about the development and evolution of eyes and present incomplete information as evidence that evolution is a "theory in crisis". An examination of the evidence, however, particularly evidence that has accumulated in the twentieth and twenty-first

centuries, refutes anti-evolutionists' claims. The distribution of eyes in extant organisms, combined with what we now know about the control of eye development across diverse groups of organisms, provides significant evidence for the evolution of all major components of the eye, from molecular to morphological, and provides an excellent test of predictions based on common ancestry.

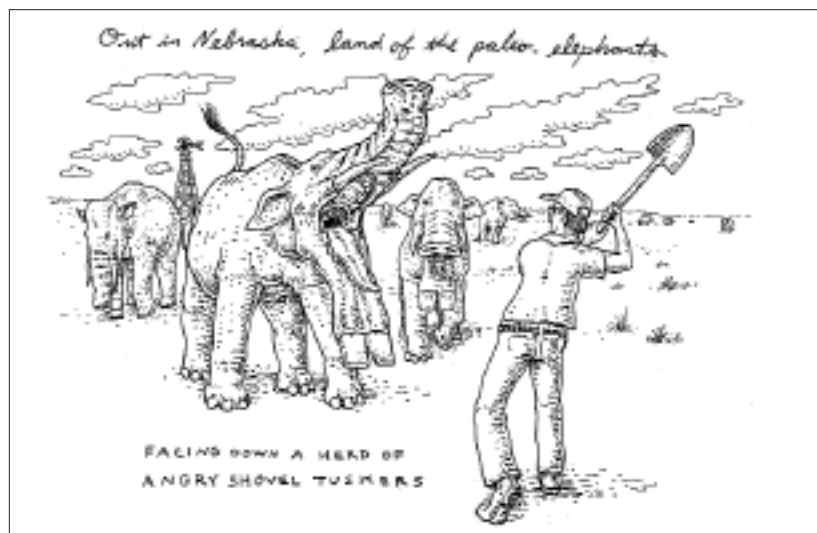
*Scientists Confront Creationism: Intelligent Design and Beyond* (New York: WW Norton, 2007), edited by **Andrew J Petto** and **Laurie R Godfrey**, was praised by **Barbara Forrest** in her review for *The Quarterly Review of Biology* (2008; 8 [3]: 292). "This book covers all of the important angles from which to counteract creationism, offering important scientific information and reference lists for further reading. It will be useful to scientists, educators, and others who want to become activists and can also understand the sophisticated (but reasonably accessible) scientific discussion," she wrote.

Included in a recent issue of *Evolution: Education and Outreach* (2009; 2 [1]: 90–4; available on-line at <<http://www.springerlink.com/content/n47h34357743w4p0/fulltext.html>>) was the latest installment of NCSE's regular column for the journal, Overcoming Obstacles to Evolution Education. NCSE's executive director **Eugenie C Scott** and deputy director **Glenn**

**Branch** argued:

Evolutionary biology owes much to Charles Darwin, whose discussions of common descent and natural selection provide the foundations of the discipline. But evolutionary biology has expanded well beyond its foundations to encompass many theories and concepts unknown in the 19th century. The term "Darwinism" is, therefore, ambiguous and misleading. Compounding the problem of "Darwinism" is the hijacking of the term by creationists to portray evolution as a dangerous ideology — an "ism" — that has no place in the science classroom. When scientists and teachers use "Darwinism" as synonymous with evolutionary biology, it reinforces such a misleading portrayal and hinders efforts to present the scientific standing of evolution accurately. Accordingly, the term "Darwinism" should be abandoned as a synonym for evolutionary biology.

NCSE Supporter **Marvalee Wake** reviewed *Science, Evolution, and Creationism* (Washington [DC]: National Academies Press, 2008; reviewed by **David C Kopaska-Merkel** in *RNCSE* 2008 Jan/Feb; 28 [1]: 35–6) for *The Quarterly Review of Biology* (2008; 8 [3]: 302). She wrote, "This thoughtfully written presentation of the nature of science with a focus on evolution, the evidence for biological evolution, and a review of creationist perspectives addresses questions about our knowledge of biological evolution and whether one can accept evolution and still retain religious beliefs. ... Its stated audience includes those involved in discussions about evolution — teachers, policymakers, legal scholars, and community members interested in quality science education. Students and adults who wish to learn more about evolution as a fact and a process that results in the diversity of life on Earth are its broader audience. The format is exceptionally useful." Wake teaches biology at the University of







## Winning Their Hearts and Minds: Who Should Speak for Evolution?

Daryl P Domning

Book reviews in recent issues of *RNCSE* have showcased a growing number of authors and reviewers who advocate some form of theistic evolution. However, other recent books by Richard Dawkins, Daniel Dennett, and other militant atheist advocates of evolution have attracted much more media attention — naturally, since extreme views always sell more newspapers than moderate ones.

Moderate views on creation-vs-evolution are not in short supply. Yet despite the Gallup polls consistently showing 35–40% of Americans somewhere between the poles of special creationism and strictly materialist evolutionism (with only 9–15% for the latter view), this reality is studiously ignored both by creationists and by materialists like Dawkins (and others). This not only polarizes the debate unnecessarily, but fundamentally misrepresents it. To break this impasse and move toward defusing evolution as an explosive social and educational issue, I propose the perhaps shocking idea that it is time for theistic evolutionists to take over from atheists as the public face of evolution advocacy.

### A CULTURAL STALEMATE

The stalemated conflict between creationists and evolutionists here in the US (and now spreading abroad) reminds me a bit of conditions in a certain Middle Eastern country where religious passions have also contributed to a dangerous degree of political polarization.

*Daryl P Domning is Professor of Anatomy at Howard University and coauthor of Original Selfishness: Original Sin and Evil in the Light of Evolution (Aldershot [UK]: Ashgate Publishing, 2006). He is a vertebrate paleontologist and studies sirenians and other marine mammals.*

At one extreme, we have religious fundamentalists whose worldview is deeply threatened by what they see as a corrupting secular culture and ideology and who resist this at all costs, sometimes by (intellectually) unscrupulous means (see *sidebars p 31, 32*). At the other pole, with scant understanding of and less sympathy for the thinking, culture, language, and concerns of their religious adversaries, are militant evangelical atheists, waging a heavy-handed, ill-advised Global War on Theism that needlessly provokes their opponents and only inflames the situation. Having seized the mantle of spokespersons for evolution, and the spotlight of the media, they drown out the voices of fellow evolutionists who would pursue a less arrogant and abrasive policy.

Secular critics like these tend to rest secure in the Green Zones of college campuses and major cities. Many scientists, in fact, declared “Mission Accomplished” years ago and dismissed the creationists as just a few diehards whose time has passed. But the sectarians who dominate much of the countryside, and have the hearts and minds of much of the population, are actively targeting their IEDs (intelligent educational designs) at school boards and state legislatures across the country. Meanwhile the noncombatant population, caught in the crossfire and not necessarily committed to any extremist faction, wants nothing more from them than answers to the great questions of human existence: the meaning of life, the reasons for suffering, and whether there is a God, an afterlife, and ultimate justice (Pennock 1997).

In this asymmetrical warfare, the secularists make easy, static targets. They fruitlessly deploy ponderous scientific artillery against the lightweight arguments of “scientific cre-

ationist” guerrillas, and wonder at how the latter always blithely dance aside to fight again another day. But the creationist leaders and their lay followers are clearly motivated by those existential and theological concerns and not by science, so the scientific arguments do not lay a glove on them.

As long as the secularists insist on prosecuting the war unilaterally in this way, they will not prevail. The only hope for a successful outcome lies with a coalition: the secularists must ally themselves with — indeed, yield leadership to — theistic evolutionists, who understand the creationists’ religious culture, speak their religious language, and can engage them on their home turf.

### THE DIVERSITY AMONG THEISTS

Anyone who pays close attention to creationists’ rhetoric will see that they ignore whenever possible the inconvenient existence of the large segment of Christianity that accepts evolution (Matsumura 1995: 22). Since most of their philosophical and moral arguments are aimed at atheists, these arguments fall flat when they are confronted with opponents who share many of their theological presuppositions. Such opponents can cut to the chase, posing to creationists the key question, “What is it about evolution that *really* bothers you? Because if it is a fear that life in the Darwinian view has no meaning and no room for God, then I am here to testify that you can be both a Darwinian *and* a Christian — in fact, a better, more intellectually consistent Christian!” In other words, Christian extremism is best left to other Christians to handle in-house.

Fundamentalists with an unshakable commitment to biblical literalism, of course, will not be open to this approach. But many

people cling to a literal reading of Genesis only because no one has ever shown them acceptable answers to their existential questions that do *not* conflict with science. By agreeing with the creationists that such answers are impossible, the extreme materialists self-defeatingly drive such folks into the creationist camp.

What I am proposing is simply that those who embrace theistic evolution, Christians especially, shed whatever shyness they have about saying so, in public and in private, and actively engage family, friends, colleagues, clergy, elected officials, news reporters, and anyone else who evinces doubt about the compatibility of evolution and religious belief. Lack of knowledge is no longer an excuse, given the rich resources recently provided by writers such as Beatrice Bruteau, Denis Edwards, Stephen Godfrey, John Haught, Kenneth Miller, Michael Ruse, Patricia Williams, and many others — most of them reviewed or otherwise represented in these pages. Fill the silence that these authors have begun to dispel. We need not agree on all the theological details; the goal is simply to make it unmistakably clear that the atheists have no monopoly on Darwinism. Speak about it, write about it, publish your own insights; but in and out of season, bear witness that you and many like you see ways to reconcile faith and science without compromising either.

Objections to this proposal are foreseeable. The militant atheists will say that it publicly divides the evolution camp; that it is an intellectually dishonest tactical sellout to theism; and that it inappropriately drags religion into a scientific debate just as the creationists do.

However, it is disingenuous to pretend that all evolutionists see eye-to-eye on philosophical or theological matters. We rightly criticize creationists who obscure the divisions among anti-evolutionists, as is done at the new Creation Museum in Kentucky (Heaton 2007). In fact, both extremes downplay their divisions, which they see as weaknesses. For the creationists, it really is a weakness, because they feel the need for science to buttress weak theology,

and therefore they must make the science point unambiguously in their direction.

But the diversity of theological views among evolutionists is potentially a strength for us in this conflict, because it corroborates one of our central arguments: the theological *neutrality* of good science. It shows that a variety of religious views is compatible with the facts of science — and some of those views may be acceptable to many who have hitherto counted themselves as anti-evolutionists. It humanizes what is now seen by many, and held up by our adversaries, as evolutionists' rigid hostility to religion and contempt for the deepest concerns of most human beings. That kind of religious rigidity is something we associate with fundamentalist religious groups. Think: if we are all about good science, then how did we get maneuvered into being known by a huge public mainly for an extreme *religious* viewpoint (and one that many of us do not even share)? Who are the real fundamentalists in this fight?

Religionists are hardly unaware that various churches and their members have theological differences. They will not be scandalized to learn that scientists also disagree on these matters that are outside of science. The point is to build a bridge across the divide, by showing them that (surprise!) many evolutionists can and do agree with *them* on many points of religious doctrine.

Furthermore, this is not a false irenicism, smoothing over fundamental differences between creationists and evolutionists just to quiet the controversy. In truth, many (perhaps most!) evolutionists *are* theists of one sort or another. Their views are as sincerely and validly held as those of the atheists and have as much (perhaps more!) claim to be representative of evolutionist thinking. Atheists have every right to believe that theists are woefully misguided in failing to see the obsolescence of religion after Darwin; but that is their philosophical opinion, not an infallibly proven proposition of science or logic. No one is expecting them to shut up or sign on to theistic evolution for the sake of a

## PLAGIARIZING FOR JESUS!

I caught my first plagiarist when I was a teaching assistant at Cornell over 40 years ago. I still catch them regularly, and frankly get a good feeling when I do. It happened again on Valentine's Day, as I was on my way to give a talk at California State University, Chico as part of its Darwin Day celebration. My copy of ICR's special anti-Darwin *Acts & Facts* for February 2009 arrived the day before. There was an article by Larry Vardiman, Chair of the Department of Astro/Geophysics at the Institute for Creation Research, entitled "The development and deficits of Darwin's theory" (p 14-5). Most of it was a condensed biography of Darwin, but one sentence stood out for me, an entomologist: "Wherever he saw a mountain he climbed it, and on one journey from Chile to Argentina over high passes of the Andes, he was bitten massively by bugs."

I *knew* I had seen that sentence before, and I thought I knew where. When I got home, I pulled out volume 5 of my Macropedia version of the 1974 *Encyclopaedia Britannica*, and there, in the article "Darwin, Charles," by Sir Gavin DeBeer, on p 492-3, I found the following sentence: "Whenever he saw a mountain he climbed it, and on one journey from Chile to Argentina over high passes of the Andes, he was bitten massively by bugs."

Not only had Vardiman lifted this passage intact (and without attribution) from DeBeer, I discovered that the first six paragraphs of Vardiman's 11-paragraph article contained only a few trivial changes from DeBeer's original text. One did not need a plagiarism-spotting computer program to spot what had been done; well over 95% of the text was identical.

In this Darwin bicentennial year, anti-evolutionists are claiming that the idea of natural selection was stolen from Alfred Russel Wallace. Well, at least they have shown they know a bit about the subject.

### AUTHOR'S ADDRESS

Arthur M Shapiro  
Center for Population Biology  
University of California  
Davis CA 95616  
amshapiro@ucdavis.edu

---

*Arthur M Shapiro is Professor of Evolution and Ecology at the University of California, Davis.*

united front; but the theists are justifiably tired of having the folks on both ends of the spectrum pretend they don't exist — presumed to be atheists by the creationists, and presumptuously spoken for by the real atheists.

## THE NATURE OF THE DEBATE

Does my proposal drag religion into a scientific debate? Let's get real: this has not been a merely *scientific* debate for a hundred years. The atheists themselves, like the rest of us, proclaim this from the rooftops: the scientific community accepted evolution generations ago, and creationism today has none but religious motives. Yet we keep acting as though the creationists' phony scientific arguments can be laid to rest by piling on more and more layers of new scientific data. Maybe that will persuade a few folks on the fence who are genuinely perplexed by scientific questions; but it is assuredly irrelevant to most people who disbelieve evolution — because they are scientific laypeople and do not lose sleep over the Second Law of Thermodynamics or whether paleontologists have a correct understanding of punctuated equilibrium.

What they do care about are those eternal existential questions, and whether belief in evolution is a threat to civilized society as we know it. Until we start addressing those concerns, the two sides of the debate will continue talking past each other, just as they have for the last 40 years and more.

Finally, is my proposal basically a tactical one? Of course it is — because the old tactics have failed to achieve more than a courtroom stalemate, while the soul of creationism is marching on in churches, classrooms, political campaigns, and the rest of society. We have been fighting the wrong war with the wrong weapons. If we are content to rest on our courtroom victories, as the winners of every stand-up fight, we will end up as we did in Vietnam: or as Sitting Bull supposedly said after the Little Bighorn, we will have “won a great battle, but lost a great war.”

To really protect education from creationism's inroads, it has to be marginalized not just scientifically and legally but theologically; and the atheists among us cannot do that. The voices of other evolutionists need to be heard. There are many such voices out there; let's start putting them front and center.

## REFERENCES

- Heaton T. 2007. A visit to the new creation “museum.” *Reports of the National Center for Science Education* 27 (1-2): 21-4.
- Matsumura M, editor. 1995. *Voices for Evolution*, second ed. Berkeley (CA): National Center for Science Education.
- Pennock R. 1997. Naturalism, creationism and the meaning of life: the case of Philip Johnson revisited. *Creation/Evolution* 16 (2):10-30.

## AUTHOR'S ADDRESS

Daryl P Domning  
Department of Anatomy  
College of Medicine  
Howard University  
Washington DC 20059  
ddomning@howard.edu

## FIRST CAST OUT THE BEAM OUT OF THINE OWN EYE

In his March 22, 2009, message to the Clergy Letter Project (<[http://www.butler.edu/clergyproject/rel\\_evol\\_sun.htm](http://www.butler.edu/clergyproject/rel_evol_sun.htm)>), Michael Zimmerman noted a complaint from Ken Ham of Answers in Genesis about how an AiG staffer was “ambushed” into a radio debate by the BBC (<<http://blogs.answersingenesis.org/aroundtheworld/2009/03/21/bbc-radio-and-ambush-journalism/>>).

Ham concluded: “[F]or those people who don't believe in God and there is no absolute authority, not telling the truth and deception would not be ethically wrong — as they have no basis for right and wrong!”

But Zimmerman has a different perspective:

I was scheduled to do an interview last year on a fundamentalist Christian radio show only to discover, upon going on the air, that Ken Ham was also on the line, ready to debate me. When asked why neither the host nor Ken had the courtesy to inform me that I was to participate in a debate rather than in an interview, I was told that they believed that I wouldn't have accepted their offer had I been told the truth. When I questioned them about the deception, I was told that, since the debate was to further God's wishes, a minor deception of this sort was acceptable. That's quite a double standard!

On March 28, Zimmerman quoted Ham's response (<<http://blogs.answersingenesis.org/aroundtheworld/2009/03/27/the-hypocrisy-police-on-full-alert%E2%80%9494but-should-stand-down/>>):

I did not know that he was not told I would be on the program. ... I assumed he would be on

after my interview with the host, but I was confused as to when. ... It was no big deal for me to do a radio debate. I do radio debates all the time; so, I was still willing to go on with it. ... All I knew is that sometime during the program, a professor from Indiana — known for his anti-creation activism — was also to be on.

Zimmerman disagreed:

[O]ff the air, at the first break, ... I asked Ken directly if he knew that I was going to be on the show with him. He said he did. It was also very clear that Ken knew exactly who I was; and, as I said before, ... since the debate was to further God's wishes, a minor deception of this sort was acceptable. Additionally, as I reported last week, I was told that they assumed that had I been told that it was to be a debate I wouldn't have agreed to go on the air.

Zimmerman reminds us that his original posting pointed out the irony of Ham's complaining about having a member of his staff treated the same way that he had treated one of his opponents. It was apparently okay to engage in deception to further God's purposes, but otherwise this behavior shows an inability to tell right from wrong.

Zimmerman concludes that even Ham's convoluted self-justification confirms that Zimmerman was “ambushed”. Ham places the responsibility for this on the producer of the radio program, pointing out he was only a guest. Of course, even by his own account, it is clear that Ham did not say, “No, it would be wrong to do this.”



# Response to “Winning their Hearts and Minds”

Sheldon F Gottlieb

In the religiously created, artificial creationism/evolution controversy, as in every social political conflict, there are basically three groups: the hard-core pro (non-theistic and theistic evolutionists), the hard-core con, and those in the middle consisting of the undecided and the apathetic — those who do not really care one way or the other. To convince people to side with a specific point of a view, arguments are framed by debaters not for the hard core but for the middle. One extreme will use information presented to support conclusions it already held while the other extreme tends to disregard proffered arguments.

When issues involve religion problems arise because one enters the world of belief — a world in which empirical data have little to no meaning when they conflict with beliefs — unsubstantiated beliefs substitute for facts and are considered to be facts. For this discussion, “religion” will refer primarily to Christianity (with a few changes reflecting other traditions, it could also refer to Judaism and Islam).

There can be no questioning of the axioms of the fundamentalists — there is a God and the Bible is the inerrant word of that God. Those opposed to science and evolution make certain declarations of the supremacy of belief and biblical inerrancy. This position is clearly stated in *Biology for Christian Schools*, second edition, a high-school level textbook by William S Pinkston Jr (Greenville [SC]: Bob Jones University Press, 1991):

*Sheldon F Gottlieb was Professor of Biology at Southern Alabama University, and is now retired. His latest book is The Naked Mind (Flagstaff [AZ]: Best Publishing, 2003).*

Christians who try to accept evolutionary theory when the Bible clearly teaches Creationism are saying that a section of the Bible is not true. The question of whether the Bible or human speculation is true then becomes a matter of choice, open for debate. Dr Bob Jones, Sr has rightly said: “Whatever the Bible says is so. Whatever man says may or may not be so.” This is the *only* consistent Christian position. All scientific facts and interpretation of those facts, therefore, must fit into the model prescribed by the Word of God. A scientific “fact” that does not fit into the model outlined in the Bible is either in error (and therefore not really a fact) or is being misinterpreted.

The above quote demonstrates that fundamentalist theists have successfully framed all science-versus-religion (SvR) discussions in such a way that they are in a no-lose situation; empirical data and reason are meaningless. Thus, speaking to a fundamentalist theist could (would) be futile.

Atheistic scientists claiming that God does not exist and who use science and/or evolution to buttress their arguments may well be absolutely correct, but those arguments cannot penetrate the unsubstantiated reality of fundamentalist religionists. Further, such arguments tend to confuse those who occupy the broad middle, who tend to be scientifically uneducated and who retain some ties, irrespective of how loose, to a concept of a supernatural being and world. Thus, fundamentalist religionists have an inherent advantage in SvR debates in that they frame the bounds of the debate and they speak with an absolute certainty while scientists

speak in tentative terms. In fact, using evolutionary data for disproving the existence of God — rather than just for showing there is an alternative explanation for life on earth based on natural laws that does not require the concept of a God — may be going beyond the boundaries of the data and, among other things, serves the function of enhancing the inherent resistance of fundamentalists — even many non-fundamentalist believers — to scientific and evolutionary thought. Atheistic arguments and individuals may move some people but they could alienate others. This is especially true in the US where there is an additional level of complexity: the involvement of unconscionable pandering politicians and media figures — irrespective of their degree of scientific knowledge — who cater to a society historically dedicated to anti-intellectualism.

Thus, Domning’s interesting concept that theistic evolutionists are the people who, because of a common base of belief and common language, are the most capable of communicating with this large, possibly religiously oriented, scientifically unlearned, middle group has a certain deceptive truth. Of course, it is always desirable to have theistic or non-theistic evolutionists speak to the “undecided” and even to the believing fundamentalists. But is it desirable to have theistic evolutionists take the lead in speaking to the general public about SvR and the artificial, creationism/evolution controversy? The answer may not be a simple yes or no but more nuanced. The answer may lie within the philosophical framework of what one is trying to accomplish.

## REACHING OUT TO PROMOTE SCIENTIFIC LITERACY

If the sole purpose of talking to the



# Communicating Evolutionary Science to a Religious Public

Keith B Miller

**F**irst, I want to endorse enthusiastically Daryl Domning's plea to those in the scientific community who are theists, and especially to those of us who are members of the Christian community. It is essential to the advancement of the public's understanding and acceptance of modern science (particularly evolutionary science)

*Keith B Miller, a Supporter of NCSE, is Research Assistant Professor of Geology at Kansas State University. He is the editor of Perspectives on an Evolving Creation (Grand Rapids [MI]: William B Eerdmans, 2003).*

that we articulate that science to the faith communities of which we are a part. The presumption of "warfare" between science and religious faith perpetuates erroneous understandings of the nature and content of science. Such misconceptions erect completely unnecessary barriers to the embrace of science by a substantial portion of the population, and turn public science education into a forum for cultural warfare. When people of faith reject the central theories of modern science because of a false perception that

those theories conflict with their faith, they not only deprive science of vital public support, but also deprive it of many bright enquiring minds in the future.

In many cases, people reject evolution (and other unifying theories within the historical natural sciences) as much because of popularly held misconceptions about the nature of science itself as because of any perceived theological conflict. The roots of the science/faith conflict are often embedded in false notions that are widely held within our culture and impact general public science literacy. It is these very misconceptions that are exploited by anti-evolution advocates. For example, theories are often viewed as merely unsubstantiated guesses, rather than as the unifying concepts that give our observations coherence and meaning. Theories within the historical sciences, in particular, are seen as being inherently untestable. Many people conceive of science as simply an encyclopedic accumulation of unchanging observational

"undecided" group is political in nature, that is, to demonstrate to the public at large that it is possible to be a "believer" and still "believe in" (as opposed to accept based on evidence) evolution, thereby decreasing public opposition to evolution, then, I suppose, there is much merit in Domning's proposal. However, if the purpose also consists of educating the "undecided" group to the importance and power of natural explanations of natural phenomena and into the ways of science, then Domning's approach is self-defeating. Why?

One of the essences of science is hypothesis testing. Theistic evolutionists, similar to fundamentalist theists, hold to an unsubstantiated belief in a supernatural being. The basic difference between the two groups pertains to the use of a certain book — the Bible — which both groups consider sacred but interpret differently. There is no way to formulate a hypothesis that would permit the testing of supernatural beliefs. Thus, the underlying basis of theistic evolution, like fundamentalism, is not completely

science-based. It opens science to the criticism that science is not really free of the supernatural but that it tolerates (respects) supernaturalism. This is a view which scientists should neither support nor want to promulgate. In the realm of belief, one could make the case that the fundamentalist theists are better situated than are the theistic evolutionists.

Fundamentalists are absolutists. Once believers interpret the Bible, they raise important theological questions. What part of the Bible is literal? What part allegorical? What part metaphorical? Who makes these decisions? How does a believer know whether those making such decision(s) are right? Under such conditions, how does a believer — or anyone — know what is what or which is which with any certainty? There is the danger that one can conclude that biblical interpreters have preconceived positions and they interpret the Bible so as to support those positions: an origin of different religious sects. If such becomes the case, then why should the book still be considered holy? If humans

interpret the Bible according to their personal dictates, then perhaps the Bible is not the word of God but the word of humans. If the Bible is not the word of God, then why is there a need for theistic evolution or theistic evolutionists?

Considering the complexities introduced by religion, any evolutionist, therefore could lead in the discussion on SvR and evolution-creation with one proviso: there is no need for atheistic evolutionists to be strident about the non-existence of God, despite the fact that fundamentalists have inextricably bound the two. The emphasis should be placed on explaining what is science, what is religion, and the differences between them, and framing all SvR creationism/evolution discussions from a scientific perspective (natural explanations of natural phenomena) and not a theistic perspective (untestable and unlimited imagination about the supernatural).

#### AUTHOR'S ADDRESS

Sheldon F Gottlieb  
10418 Utopia Circle East  
Boynton Beach FL 33437  
shellyeda@gmail.com

"facts". Thus, the dynamic nature of science with the continual revision of theoretical constructs becomes for them evidence of the fleeting validity of scientific "truth". The claim that modern science is based on an atheistic philosophy that denies the existence of anything beyond the material is commonly built upon the background of these other false notions of science. The result is both predictable and preventable.

As Domning states, being public advocates for the compatibility of evolutionary science and religious faith is not about injecting religion into science. Far from it! It is simply presenting the true face of science, which is practiced by individuals representing a very wide range of theistic and non-theistic views. The methods of the natural sciences are limited to understanding the natural world and its history in terms of natural cause-and-effect processes, a limitation frequently described by the term "methodological naturalism". Science, as a method of inquiry about the natural world, can make no claims about the existence or non-existence of God, or of any supernatural entity. Atheism is neither an assumption nor a conclusion of science. Scientific investigation is a trans-cultural and religiously neutral enterprise, and is therefore universally accessible. However, while science as a discipline is religiously neutral, individual scientists are not. We each live out our scientific vocations within a broader context.

A view of science that recognizes its interaction with the values and beliefs of the broader culture need not be left at the public school door. Presenting the historical development of scientific theories in the classroom is a very effective way of communicating to students why certain theories have come to be widely accepted by the scientific community. Such historical accounts will of necessity display the roles (both positive and negative) played by culture, religious faith, philosophy, and even individual personalities in the shaping of modern science. History also reveals how new powerful explanatory theories arise and displace previously strongly held views. It reveals the interesting,

# Keeping Evolution Education in Perspective: A Response to Daryl Domning

Erik B Pietrowicz

While Domning raises many interesting points, the one he referred to as the "Global War on Theism" resonated with a concern I have had for some time. Specifically, how can we teach students and the general public that science (and the field of evolution in particular) is *not* religiously motivated, when many of today's most prominent evolutionary biologists actively intertwine the two in order to promote their theological worldview, and, as discussed later, when many educators share that mindset?

At a fundamental philosophical level, the fact that the opinions expressed by those exemplified by Dawkins are in opposition to the majority is immaterial. Let us remind ourselves that science is a systematic study of the natural

world and the methodology used to do so. So, science is a study of *nature*, and theology deals primarily with the supernatural. Therefore, science cannot address theological concerns such as the existence or nonexistence of any supernatural being. As Domning writes, "one of our central arguments [is] the theological *neutrality* of good science." This precludes the use of science to promote any theological worldview, from wherever along the spectrum one finds oneself.

However, it would be naïve to stop here, as if the issue may be put to rest simply by invoking Gould's concept of non-overlapping magisteria. The public is not generally concerned with making the distinction between scientific evidence and religious belief. In practice, then, the nature of the theological opinions that are com-

dynamic, and very human processes involved in advancing our understanding of the natural world. Such an approach to teaching science also provides a legitimate context in which teachers and students can address the ethical and social dimensions of the application of scientific knowledge.

Science is not learned and applied in some culturally and religiously sterile environment. The motivations that drive us to understand the natural world and to apply that knowledge for the good of others and the world are part and parcel of our most deeply held philosophical and religious commitments. Why should those commitments be hidden when we communicate our passion for science to

others? People will more easily recognize that science has something valuable for them when they see it embodied in those who share their deeply held faith commitments. A consequence of this more human face to science may just be a reinvigoration of scientific interest in our schools and in our nation.

I discuss these various public misunderstandings at length in my "Countering public misconceptions about the nature of evolutionary science" (*Southeastern Biology* 2005; 52: 415-27).

## AUTHOR'S ADDRESS

Keith B Miller  
c/o NCSE  
PO Box 9477  
Berkeley CA 94709-0477  
ncseoffice@ncseweb.org





## Rejoinder to Comments on “Winning Their Hearts and Minds: Who Should

Should theistic evolutionists take the lead in publicly defending evolution? Shelly Gottlieb gets to the heart of the matter when he says that the answer depends on “what one is trying to accomplish”. However, I do not fully agree with the choices he offers. One possibility he proposes is “to demonstrate to the public at large that it is possible to be a ‘believer’ and still ‘believe in’ (as opposed to accept based on evidence) evolution”; the other is “educating the ‘undecided’ group to the importance and power of natural explanations of natural phenomena.”

Instead, what I would like to demonstrate to the public is that one can be a religious believer and still accept evolution based on evidence (as opposed to “belief”). Now, if that somehow helps convince them of the power of natural explanations, fine; but that’s not my main goal, nor is it necessarily very relevant to the creation-evolution dispute. As Erik Pietrowicz correctly notes, “The public is not generally concerned with making the distinction between scientific evidence and religious belief.” Generally, they want to make sense of their existence and find meaning in their lives. Fundamentalists

offer them explanations that cannot be reconciled with modern science, and rubbing that fact in just makes them more uncomfortable. If we see our job (especially outside the classroom) as only being to “educate” the public about the ways of science, we are ignoring what our audience sees as important. That is what I would call self-defeating. Evolutionists have been doing that in debates with creationists for forty years and more — and look where it has gotten us.

Gottlieb argues that theistic evolution “opens science to the criticism that science is not really free of the supernatural but that it tol-

monly associated with evolutionary biology *is* important, as they can end up driving a false wedge between religion and science in general. Thus, evolution education (and religion?) suffers as atheism and evolutionism become synonymous in the public mind.

We can all think of examples of theologically inflammatory behavior by scientists in the spotlight. Consider the cover of David Sloan Wilson’s *Evolution for Everyone*, which puts a halo over the old Darwin monkey-man caricature. While this makes for light humor, it can also come across as subtle mockery of those who do not understand evolution, particularly those who doubt evolution based on a perceived conflict with religious belief.

At the Evolution 2008 confer-

ence in Minneapolis, I attended many productive discussions and presentations about teaching evolution in the classroom. However, the content of one discussion was particularly worrisome. The topic it attempted to address was “When religion and science clash in the mind of a student, how should the instructor respond?” In other words, if a student refuses to learn in any subject based on personal beliefs, regardless of whether or not they accept the validity of the material, what then are the instructor’s responsibilities and/or restrictions toward addressing the student outside the classroom?

The problem in this discussion arose in the wording of the dialog and by extension the attitudes of the discussants. The initial question very quickly deteriorated from being one of ethics and pedagogy into asking if a student refuses to accept evolution, “... can I say no, you’re wrong?” and “How can I get them to believe?” I found this shift in thought to be highly disturbing. Education is not about forcing a

belief, and *antagonism is not an effective educational tool*. It serves only to alienate students, and by putting them on the defensive perpetuates their distrust of science, which, in turn, is counterproductive in improving scientific literacy. As another discussant pointed out, the goal is not for all students to accept evolution by the end of their first semester in college — developing understanding often takes time.

This can be extended to say that the goal in the forum of public opinion is not for people to abandon their religious beliefs in favor of evolution (or any other scientific theory), but to promote a better understanding of science. Perpetuating the false dichotomy of science *or* religion — but not both — can exacerbate the problem and lead to the opposite of the effect we desire.

### AUTHOR’S ADDRESS

Erik B Pietrowicz  
Department of Biological Sciences  
University of Southern Maine  
Portland ME 04103  
epietrowicz@gmail.com

*Erik B Pietrowicz is a graduate student in biology at the University of Southern Maine, studying neurotoxicology and evolution. He is also actively engaged in high school science education.*

# Speak for Evolution?"

*Daryl P Domning*

erates (respects) supernaturalism." Actually, this should not describe *science*, but rather scientists (except for the openly intolerant ones). As Keith Miller says, "while science as a discipline is religiously neutral, individual scientists are not. We each live out our scientific vocations within a broader context." We were all born human before we were trained in science, and we did not check our humanity at the door of the laboratory. We did not forfeit our right to believe in the supernatural, or our civic duty to respect those who do. If we had done so, we would be less than fully human, and even more alienated from our non-scientist fellow citizens. (We Catholics used to have a saying: "Error has no rights." Fortunately, it was abandoned as church policy almost half a century ago, when a different view prevailed: "People have rights, even people who are in error!")

If, on the contrary, we want to communicate with the public and persuade them (and we have to do this to make our schools safe for science), then we need to use that non-scientist part of ourselves, along with our scientific training. We who are believers need to be role models who prove the theological neutrality of science, by showing that believers can be just as comfortable with Darwinism as atheists are. And when fundamentalists question the quality of our belief, we have to be able to defend it, along with our approach to interpreting the Bible and our overall worldview.

Pietrowicz poses the related question: If and when religion and science clash in the minds of students, how should the instructor respond? Certainly not by demanding that they "believe in" evolution in order to pass (though they can be required to learn the evidence presented even if they

do not buy the interpretation). But I see nothing wrong with also saying something like "Hey, I'm a Christian too, but I don't have a problem with evolution. If you want, we can discuss that sometime outside of class." In many cases, that would pique the curiosity of students on both sides of the issue, and might lead to a fruitful, even enjoyable off-campus bull session. The key is to avoid pugnacity, defensiveness, or putting students down: respect really pays off and is part of what we should be teaching, in addition to the science.

In such a conversation about beliefs (with questioning students or committed fundamentalists), most scientists who are not believers will quickly find themselves tongue-tied, reduced to sputtering impotence or insufferable arrogance — neither response will be very persuasive. Not all fundamentalists are ignorant, or intellectual pushovers. The sincere ones have serious concerns that deserve serious responses. Explaining how sci-

ence differs from religion may be a good start, but it does not get us all the way to explaining the meaning of life. Scientists who are unwilling or unable to go beyond science in order to defend science must face the fact that they cannot reach many of the people who need to be reached.

Committed atheists, in particular, have to decide which they care about more: making our schools safe for evolution, or ridding the world of religion. The latter, whether desirable or not, is emphatically not a prerequisite to achieving the former; and in any case, trying to do both at once just inflames the controversy and alienates religionists who are the atheists' potential allies in supporting good science. This does not help the cause of science education.

#### **AUTHOR'S ADDRESS**

Daryl P Domning  
Department of Anatomy  
College of Medicine  
Howard University  
Washington DC 20059  
ddomning@howard.edu





## The Temple of Serapis

The Serapeum is a structure better known to scientists as the Temple of Serapis, named for an Egyptian deity worshiped by Romans. It stands along the coast just north of Pozzuoli, Italy. Stone used by Romans to build the temple had originally formed as limestone sediment at the bottom of the sea, where it metamorphosed into marble, and millions of years later was raised as land. Approximately 2000 years ago, the marble was quarried, carved into pillars, and set into the temple, which originally was a marketplace and spa for wealthy Romans. Since that time, sea levels changed several times and in the process the temple was repeatedly submerged and exposed. The volcanic features around the Temple of Serapis helped inspire Virgil's account of the entry into the underworld in the *Aeneid*.

For most geologists, the Temple of Serapis is more than a monument of ancient art. For example, John Playfair — in a chapter titled “Changes in the Apparent Level of the Sea” — discussed the temple in his *Illustrations of the Huttonian Theory of Earth* (1802). The temple was also visited by Charles Babbage, Emma Darwin, and several other people associated with the creationism/evolution controversy. However, the scientist most closely associated with the temple is geologist Charles Lyell, who made it an icon of uniformitarianism when he used a drawing of the temple's columns as the frontispiece of his monumental *Principles of Geology: Being an Attempt to Explain the Former Changes of the Earth's Surface by Reference to Causes now in Operation* (Figure 1), a book that the late Stephen Jay Gould described as “the most famous geological book ever written.” Lyell, who wanted to “free the science [of geology] from Moses,” emphasized that the geological changes that have been shaping earth for millennia are observable today. Lyell's ideas about the Temple of Serapis prompted Richard

Fortney (author of *Earth: An Intimate History*) to describe the ruins as a “holy place for rationalists.” What makes the temple such an important place for geologists?

When Lyell visited the temple's ruins in 1828, its three remaining marble pillars — each some 40-feet high — were still standing (the fourth column lies in pieces on the temple's floor). In *Principles of Geology*, after describing the columns as “smooth and uninjured to the height of about twelve feet above their pedestals,” Lyell made his most important point: “Above this is a zone, about nine feet in height, where the marble has been pierced by a species of marine perforating bivalve, *Lithodomus*.” (*Lithodomus* is a genus of clams that burrow into piers and boat-moorings.) Since these clams cannot live above the low-tide line, Lyell concluded that the columns had at one time been underwater (many of the columns' holes still have shells of *Lithodomus* in them). The original temple had been built above sea level, but the presence of the mollusks on the columns meant that the columns had been partially submerged and were standing upright in the ocean. The columns had then been raised to their present level by the volcanic eruption that produced Monte Nuovo just northwest of Pozzuoli.

Because the lowest parts of the Temple's columns were not bored by bivalves, Lyell suspected that these parts of the columns had been buried in volcanic sediments. He was right; these sediments had been excavated in 1749 — almost 80 years before his visit. While at Pozzuoli, Lyell also noted that two other temples were submerged just offshore northwest of the Temple of Serapis. Since these changes had occurred during recorded history, Lyell concluded that the same geological processes — over the expanse of geological history — could build mountains, valleys, and all the other geological features we see today.

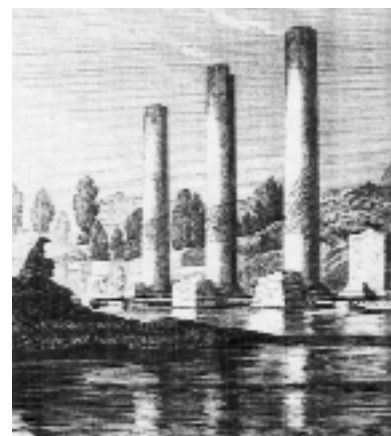


Figure 1. The Temple of Serapis was made famous among geologists by Charles Lyell, who included a sketch of it in the frontispiece of his *Principles of Geology*. The dark bands on the marble pillars were formed by mollusks that drilled into them after the columns were submerged in the sea.

Lyell had a dramatic and immediate impact on Charles Darwin; as Darwin noted, “I never forgot that almost everything which I have done in science I owe to the study of [Lyell's] great works.” However, Lyell was reluctant to accept Darwin's ideas about evolution, especially as they related to humans. Darwin's *On the Origin of Species*, which to many was an inevitable sequel to Lyell's advocacy of uniformitarianism, troubled Lyell, who did not initially accept the same degree of continuity of life as he claimed for the physical features of the earth's surface. However, Lyell finally admitted that Darwin's *On the Origin of Species* was “a splendid case of close reasoning” and that “I have been looking down the wrong road.”

Today, the Temple's pillars — which remain standing (Figure 2) — are pictured on the reverse of the prestigious Lyell Medal, which is awarded by the Geological Society of London.

Figure 2. Today, the Temple of Serapis looks much as it did when it was visited by Lyell in 1828. The dark bands on the pillars noted by Lyell are still visible. (Photo by Randy Moore.)





# Thank God for Evolution! — A Response to a *RNCSE* Review

Michael Dowd

“Michael Dowd illustrates in *Thank God for Evolution!* that there are many ways to be a spiritual person, and that all of them are enriched by an understanding of modern science, especially evolution. This is a creative, provocative book that sheds light on just about any spiritual path one might be on. Many will find their faith revolutionized.”

— Eugenie C Scott, Executive Director,  
National Center for Science Education

Thank you for the opportunity to respond to Clay Farris Naff's review of my book, *Thank God for Evolution!* (*RNCSE* 2007 Jan-Apr; 27 [1-2]: 52-3). Naff is a gifted writer with a well-honed, wry sense of humor. I found myself laughing even while thinking that he largely missed the purpose of my book. Of course, I realize that the responsibility lies with me, the author, to communicate effectively. That is why I appreciate the opportunity to clarify the nature and purpose of *Thank God for Evolution!* (*TGFE*) for *RNCSE* readers, and to correct one important misrepresentation of my book in Naff's review.

I wrote *Thank God for Evolution!* mostly to help religious believers from different traditions move toward an evidential worldview without having to abandon their tradition and join the atheist/humanist camp to do so. The

book itself emerged out of field-testing the ideas contained within *TGFE* with religious and non-religious audiences across the theological and philosophical spectrum. Since April 2002, my wife, Connie Barlow (an acclaimed science writer), and I have delivered Sunday sermons, evening programs, and multi-day workshops in more than 550 churches, convents, monasteries, and spiritual centers across the continent, including liberal and conservative Roman Catholic, Protestant, Evangelical, Unitarian Universalist, Unity, Religious Science, Quaker, Mennonite, and Buddhist groups. We have also presented audience-appropriate versions of this message in nearly a hundred secular settings, including colleges, high schools, grade schools, nature centers, and public libraries.

Few things are more important, it seems to us, at least here in America, than for tens of millions of religious believers, over the next few decades, to come to embrace a science-based understanding of the world. Why? Because it matters — politically, theologically, personally — what we think about evolution. Trying to understand reality without an evolutionary worldview is like trying to understand infection without microscopes or the structure of the universe without telescopes. It's not merely difficult; it's impossible.

Until churches in America preach evolution enthusiastically, sacredly, in ways that expand and enrich faith, the battle over teaching evolutionary science in public schools will never end. Thus, the primary purpose of *TGFE* is to assist religious believers in letting go of literal interpretations of their

otherworldly, supernatural myths and to wholeheartedly embrace an evidential, empirical worldview. Surely, this turn needs to happen in order for radically diverse religious people to cooperate in service of a just and sustainable future.

Those who might initially be put off by the religious language in my book should know that my wife, Connie Barlow, an evolutionary humanist/atheist science writer, worked with me very closely throughout the writing and editing process. She ghostwrote the science chapters, as I mention in my Acknowledgments.

Richard Dawkins graciously allowed me to include a letter he wrote to his daughter Juliet as an appendix in my book. That letter was previously published as the last chapter in his *A Devil's Chaplain*. There, Dawkins highlights the difference between believing something based on measurable evidence versus believing something based on private revelation, scripture, authority, or tradition. That religious people might, likewise, come to value this distinction is a central theme of my book.

In re-reading Naff's review, other than the half dozen or so minor things he didn't like about my book (too many exclamation points, for example, which he was certainly correct about; we removed nearly three dozen of them before the hardcover was printed), his only really substantive criticism related to the question of teleology. He writes, “Dowd has embraced a species of natural theology, and that biases his worldview toward a benevolent teleology that science cannot support.”

This is demonstrably incorrect, however. Nowhere in my book do I suggest, or even imply, that there is a force or intelligence outside the universe (or within it) that is pulling strings or making evolution go in a benevolent direction. With respect to “the arrow of evolution,” what I do say is this: When we look back over the course of billions of years of biological and human evolution, we see interdependence and cooperation at increasing scale of size and complexity. This is an empirical fact, not a statement of belief. Three or four billion years ago, the peak of earth's

---

Michael Dowd received a BA in biblical studies and philosophy (*summa cum laude*) from Evangel University in Springfield, Missouri. He also earned a Master of Divinity degree (with honors) from Eastern Baptist Theological Seminary in Philadelphia. He served as a United Church of Christ minister for nine years in Massachusetts, Ohio, and Michigan. His book *EarthSpirit: A Handbook for Nurturing an Ecological Christianity* (*Mystic [CT]: Twenty-Third Publications*, 1991) was one of the first attempts to look appreciatively at traditional Christianity from the perspective of a modern cosmology. He and his wife Connie Barlow are co-creators of the leading educational website in the Evolution Theology movement: <<http://www.TheGreatStory.org>>.

# BOOKREVIEWS

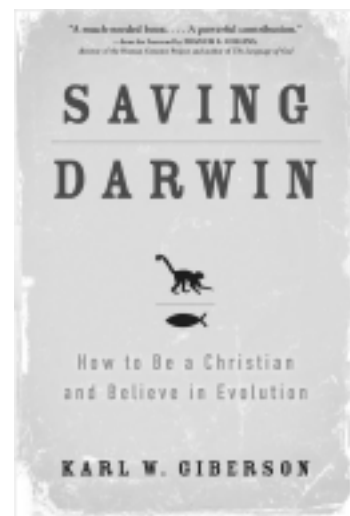
## SAVING DARWIN: HOW TO BE A CHRISTIAN AND BELIEVE IN EVOLUTION

by Karl W. Giberson  
New York: HarperOne, 2008.  
248 pages

**Reviewed by**  
**Denis O. Lamoureux**

Karl Giberson is a prominent figure in the modern dialog between science and religion. He is a professor of physics at Eastern Nazarene College and the director of the Forum on Faith and Science

at Gordon College. Giberson was also the founding editor of *Science and Theology News* and the editor-in-chief of *Science and Spirit*. His recent book *Saving Darwin* will enjoy a wide readership, and it will certainly challenge many, raising important questions about how science and Christianity are to be related. The book features a lively and witty writing style, and in particular, it is very personal. A lasting image I have is of Giberson



telling his story of leaving home to attend college and bringing along his copies of Henry Morris's *The Genesis Flood* and *Many Infallible*

evolved complexity was expressed in carbon-based molecules maintained by processes cooperating at the scale of a millionth of a meter. Today, mutual support in the maintenance of peak (cultural) complexity occurs across distances measured in the millions of meters. It is true that I interpret this trajectory in a way that many find religiously inspiring. I also, however, acknowledge that it is just as legitimate to interpret the same facts in a non-inspiring way.

Similarly, Naff wrongly suggests that in my making the case for chaos and “bad news” catalyzing evolutionary creativity, I must therefore believe that some force or intelligence is intending favorable outcomes. Not at all. Rather, I am simply pointing out that how we choose to interpret reality and life's events profoundly affects the quality of our existence — and this is just as true collectively as it is individually. In my book I mention that many, including myself, have found the mantra “the universe is conspiring on my behalf” to be an exceedingly *useful* outlook in most situations. That is, when I act as if this were true, I love my life. I do not, however, suggest that this interpretation is “the Truth”.

In his final paragraph, Naff

writes, “a commitment to science requires an unflinching acceptance of the evidence, good or bad.” I could not agree more. There is no guarantee that our species will survive into the future. But it does seem to me that we are far more likely to do so if religious people around the world are offered a way of thinking about science in general, and evolution specifically, that they can enthusiastically embrace. I am certain that one of the reasons *TGFE* has been endorsed by five Nobel laureates and 120 other leading scientists, ministers, and theologians, from Baptists to Buddhists, is that it is an important step in this direction. As David Sloan Wilson, author of *Darwin's Cathedral* and *Evolution for Everyone*, offered:

An itinerant preacher who teaches evolution in the evangelical style? I was skeptical at first, but Dowd remains true to both science and the spirit of religion. He understands that what most people need to accept evolution is not more facts, but an appreciation of what evolution means for our value systems and everyday lives.

Those who have no use for religious language may nonetheless appreciate my book for how it can help the religiously minded to comprehend and value the worldview of science. Time and again, in speaking across North America, I have found that roughly 70% of Americans, including most humanists and virtually all moderate and liberal Christians (and even some evangelicals) find the integration of faith and reason that *TGFE* offers to be an exciting and radically fresh third way beyond the chronic debate between the “New Atheists” and those espousing “intelligent design”. For public school teachers trying to teach the science of evolution to increasingly resistant students from religious backgrounds, *TGFE* may be just the bridge they've been looking for. That, at least, is my hope.

*Thank God for Evolution!* is available as a free PDF download via <<http://ThankGodforEvolution.com>>.

**AUTHOR'S ADDRESS**  
Michael Dowd  
c/o NCSE  
PO Box 9477  
Berkeley CA 94709-0477  
[ncseoffice@ncseweb.org](mailto:ncseoffice@ncseweb.org)

*Proofs.* I can relate completely with his “teenage fundamentalist” (p 3) phase of life, because I have traveled a nearly identical route (I offer my personal story in Lamoureux 2008: 332–66; see review on p 46).

One of the best parts of the book is a summary of the history of the “Darwin wars” in America. Numerous longer and more detailed accounts exist of these encounters, but Giberson offers an accessible distillation of the 1925 Scopes “monkey” trial, the 1981 Arkansas trial challenging a law calling for equal treatment of evolution and creation science in schools, and the recent Dover trial dealing with the teaching of “intelligent design”. The book is also a historical examination of Darwin’s personal religious beliefs, revealing without any question that the famed naturalist wrestled mightily with the theological implications of his theory of evolution. Giberson correctly points out that the vicious character of nature (as seen with the *Ichneumonidae*) and personal tragedies (like the death of his beloved ten-year-old daughter Annie) were powerful factors leading Darwin away from theism and Christianity. However, and this is a minor quibble, Giberson understates the spiritual impact of nature upon Darwin. The “wondrous universe” and “wonderful contrivances for certain purposes in nature” led Darwin to fluctuate from his agnosticism late in life back to deistic, and maybe even theistic, moments (Barlow 1958: 92–3; Darwin 1888: 1: 304, 316).

In order to assist his Christian readers in coming to terms with evolution, Giberson offers an excellent description of evolution’s metaphysical status. He writes:

Biological evolution, in its pure form at least, is purely

descriptive. It tells us, as best it can, what happened, like a video of an event. It does not pass judgment on whether the history it describes was good or bad, just as a video passes no judgment on the event it captures. (p 64)

In addition, throughout the book, Giberson respectfully decouples evolutionary theory from the dysteleological metaphysics and personal philosophical commitments of Carl Sagan, EO Wilson, Daniel Dennett, Richard Dawkins, and other like-minded skeptics. As far as I am concerned, this categorical differentiation is absolutely essential in moving beyond the so-called evolution versus creationism debate. Evolution is a magnificent and fruitful scientific paradigm, but it is dead silent with regard to its metaphysical status, and caution is necessary to avoid conflating one’s personal beliefs, whether religious or antireligious, with this scientific theory.

As much as I enjoyed Giberson’s book, I do have one serious concern. The subtitle, “How to be a Christian and Believe in Evolution,” is regrettably inaccurate (it was the publisher’s subtitle, not that of the author). Let’s be frank: the anti-evolutionism in America is rooted in evangelical Christianity, and if anyone is going to assist this religious tradition (which by the way is my tradition; I’m a Baptist), then he or she must deal directly with the opening chapters of the Bible. Giberson points to a survey that reveals “over half the population of the United States accepts the biblical creation story,” and then attempts to deal with this problem by stating that “this position is thoroughly at odds with almost *all* relevant scholarship of the past century” (p 6, his emphasis). An argument from authority will never be effective with evangelicals. In the study cited by Giberson, it was shown that 87% of evangelicals believe that the accounts of a six-day creation and Noah’s flood are “literally true, meaning it happened that way word-for-word.” Solving the problem of anti-evolutionism in the nation requires dealing with the evangelical belief in concordism, the notion that the Bible reveals accurate scientific and historical

facts in its opening chapters. And Giberson falls quite short on this issue. I doubt that many full-blooded, Bible-verse-memorizing, and Gospel-witnessing evangelicals will step away from their anti-evolutionism after reading *Saving Darwin*.

But Giberson’s book is an important one. Its personal story is courageous and honest. As a Christian, he is even willing to confess, “[M]y belief in God is tinged with doubts, and in my more reflective moments, I sometimes wonder if I am perhaps simply continuing along the trajectory of a childhood faith that should be abandoned” (p 155). Yet, as a physicist, Giberson is drawn back to faith by the universe. In a section entitled “A Brief History of Everything,” he outlines surprising characteristics in cosmological evolution, and seven times he states that there is something remarkably “interesting” about these that eventually leads him to believe that “the universe is more than particles and their interactions” (p 220). And in his yearly pilgrimage to the Canadian wilderness, Giberson feels the spiritual impact of nature upon him. He asks, “If the evolution of our species was driven entirely by survival considerations, then where did we get our rich sense of natural aesthetics?” (p 209). Indeed, in many ways, Karl Giberson is Charles Darwin. Both are scientists grappling with faith and in awe of the “endless forms most beautiful and most wonderful [that] have been, and are being, evolved.” (Darwin 1964: 490).

#### REFERENCES

- Barlow N, editor. 1958. *The Autobiography of Charles Darwin, 1809–1882*. London: Collins.
- Darwin C. 1964. *On the Origin of Species: A Facsimile of the First Edition*. Cambridge (MA): Harvard University Press.
- Darwin F, editor. 1888. *The Life and Letters of Charles Darwin*, 3 vols. London: John Murray.
- Lamoureux DO. 2008. *Evolutionary Creation: A Christian Approach to Evolution*. Eugene (OR): Wipf and Stock.

#### AUTHOR’S ADDRESS

Denis O Lamoureux  
St Joseph’s College  
University of Alberta  
Edmonton, Alberta  
Canada T6G 2J5  
dlamoure@ualberta.ca

*Denis O Lamoureux is an Associate Professor of Science and Religion at St Joseph’s College in the University of Alberta. With Phillip E Johnson, he co-authored Darwinism Defeated? The Johnson-Lamoureux Debate on Biological Origins (Vancouver [BC]: Regent College Publishing, 1999), and he wrote Evolutionary Creation: A Christian Approach to Evolution (Eugene [OR]: Wipf and Stock, 2008).*



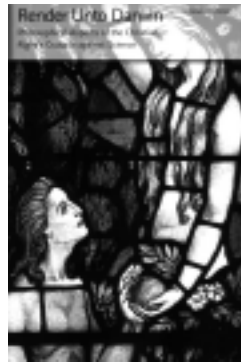
# RENDER UNTO DARWIN: PHILOSOPHICAL ASPECTS OF THE CHRISTIAN RIGHT'S CRUSADE AGAINST SCIENCE

by James H Fetzer  
Chicago: Open Court, 2007.  
201 pages

Reviewed by Keith M Parsons

Philosopher of science James H Fetzer argues that creationism, both in its fundamentalist young-earth form and in the guise of allegedly more sophisticated “intelligent design”, fails to qualify as science, and therefore is not a respectable theoretical alternative to evolutionary science. As the book’s subtitle implies, Fetzer holds that the attack on evolution is part of a comprehensive effort by the religious and political right to undermine scientific rationality and the authority of science. He further identifies the right’s attack on science as a single battle of a multi-front offensive by political and religious extremists.

Fetzer, of course, is not the first professional philosopher of science to criticize creationism (see Kitcher 1982, 2007; Ruse 1982; Pennock 1999; Shanks 2004; Sarkar 2007), and his critique is decidedly less effective than those previous ones. What made Philip Kitcher’s books, for instance, so effective was that he offered trenchant, detailed, point-by-point critiques of creationist claims, based upon a close reading of creationist texts, and informed by a deep understanding of the scientific issues. Fetzer’s treatment of leading “intelligent design” proponents Michael Behe and William Dembski is cursory at best. Fetzer apparently does not feel that it is necessary to delve into a detailed critique because he thinks that creationism blatantly violates the criteria that demarcate science from nonscience, and that



science have largely shied away from the attempt to formulate criteria to demarcate science from nonscience, for the simple reason that past such efforts have come to grief. Many attempts have been made to spell out the distinctive virtues of scientific theories, such as falsifiability, progressiveness, predictiveness, and so on., that are supposed to distinguish genuinely scientific theories from less worthy ones. Such proposals do not hold up under careful scrutiny. Larry Laudan seems to speak for the majority of philosophers of science when he warns of “the probable futility of seeking an epistemic version of a demarcation criterion” (Laudan 1988: 348). In other words, “science” has historically comprised a set of practices and beliefs so varied that they defy neat categorization by a one-size-fits-all set of demarcation criteria.

It is not, of course, that we do not value scientific theories that, among other things, are falsifiable, progressive, and accurate. Of course we do. The problem is that it is one thing to list some of the various virtues of good theories, but it is another to try to base strict demarcation standards on our descriptions of such desiderata. Consider Sir Karl Popper’s famous falsifiability criterion. Popper held that a theory is scientific only if it is falsifiable, that is, if and only if some observation, measurement, experiment, or other empirical procedure can discredit the theory. The falsifiability criterion is intuitively appealing, and, indeed, we do not accept a theory as scientific if it is compatible with all conceivable observations or data; scientific theories must have empirical content.

But as a candidate for a criterion of demarcation, falsifiability is fraught with problems (see Gale

creationist claims can therefore be dismissed without much ado.

In recent years professional philosophers of

1979: 199–205 and Chalmers 1999: 87–103), among others, that it seems far too *permissive*. If creationists and other pseudoscientists are willing to name *any* possible observation, however improbable, as incompatible with their claims, then the criterion of falsifiability cannot be invoked to rule these claims out of science.

To argue in the manner that Fetzer does that creationism is not science, we first have to say what science is. Fetzer says that the aim of science is to discover laws of nature (p 38). Further, scientific knowledge is expected to meet standards of conditionality, testability, and tentativeness:

Scientific knowledge assumes forms that are *conditional*, *testable*, and *tentative*. The conditionality of scientific hypotheses and theories arises from characterizing what properties or events will occur in a world as permanent properties or causal effects of the presence of other properties or the occurrence of other events. Such knowledge has to be testable, where it must be possible to detect the presence or absence of reference properties or events-as-effects in order to subject those hypotheses and theories to empirical test. Moreover, scientific knowledge is tentative insofar as it is always subject to revision due to technological innovations, the acquisition of additional evidence, or the discovery of alternative hypotheses. (p 38)

Fetzer then considers some typical creationist claims — such as the sudden and recent appearance of the earth and life, including humans, in essentially their current form — and concludes that such claims cannot count as scientific hypotheses since they are asserted unconditionally, are untestable, and are held absolutely and not tentatively (p 38–9).

Surely, though, it is too narrow to say that *the* aim of science is to discover laws of nature. Much progress in science occurs when

*Keith M Parsons is Professor of Philosophy at the University of Houston, Clear Lake. Among his books is Drawing Out Leviathan: Dinosaurs and the Culture Wars (Bloomington [IN]: Indiana University Press, 2001).*

scientists produce detailed, well-confirmed explanations of singular phenomena, or localized clusters of phenomena, rather than the discovery of new general laws. For instance, geologists offer detailed explanations of the structure of the Swiss Alps in terms of complex processes of thrusting and folding. This thrusting and folding is further explained in terms of tectonic processes such as the relative movements of lithospheric plates. Of course, such explanations presume that, at considerable explanatory distance, the basic laws of chemistry and physics are operating as the *ultimate* explanations of geological processes. But the proximate explanations of geological events, such as the Alpine orogeny, neither invoke such laws nor reveal the existence of new ones.

What about Fetzer's claim that central creationist claims are not made conditionally, that is, they do not specify particular conditions under which such events should be expected to occur? Some unquestionably scientific hypotheses seem to have been asserted unconditionally. Standard big bang cosmology postulates the initial singularity as an ultimate, unconditioned fact. The initial singularity is unconditioned because there are, by hypothesis, no conditions prior to the big bang.

As for testability, are creationist claims testable? If, contrary to fact, the fossil record contained trilobites, dinosaurs, mastodons, rabbits, eurypterids, and coelacanths all mixed together in no discernable order, and if all sedimentary rocks bore evidence of having been deposited in a single, recent, cataclysmic event, and if remains of a large wooden ship were found on top of Mount Ararat, then, surely, young-earth creationism could claim to be not only testable but confirmed. The problem with creationism (besides simple dishonesty) is not that it is untestable, but that it has an egregious record of failure.

Finally, tentativeness does not seem to be a virtue of science but of scientists, that is, it is not a virtue of theories themselves, but *how* they are held. Scientists are rightly expected to hold on to theories only so long as the evidence war-

rants, or at least permits, and not to cling to them dogmatically, come what may. Therefore, to say that creationist tenets are not held tentatively may be an accurate *ad hominem* against creationists, but is not an objection to creationism itself.

It is not that Fetzer is a bad philosopher; he is a very good philosopher. The problem is with philosophy, at least as it is still too often practiced. Philosophers like Kitcher are effective critics of creationism because they are willing to get down from philosophy's high horse and get down into the trenches with creationists. Philosophy's self-image, which Richard Rorty mocked as "the tribunal of pure reason," has too often permitted philosophers, as would-be justices of the high court of pure reason, to refuse to soil their hands with the messy factual details. Too often they have theorized with vague, stereotypical, and ahistorical images of scientific practice, and this fed the illusion that science, and its practices of explanation and confirmation, admitted of neat packaging into simple, rigorous accounts. More historically sensitive studies of science, initiated by Thomas Kuhn's *The Structure of Scientific Revolutions* (which, of course, brought its own distinct problems), were supposed to change all this and prompt philosophers to adopt a far more nuanced, complex, and historically aware understanding of science, its history, and its practice. Fetzer's book shows that there is still a long ways to go in this regard.

Though Fetzer misfires against creationism, his book contains a number of very interesting and enlightening discussions of questions in the philosophy of biology, such as whether evolution optimizes and whether species should be regarded as individuals, as a number of leading philosophers and evolutionary biologists have maintained. The book can be recommended just for its discussion of these points. Also, some readers may appreciate the fact that Fetzer ties creationism to larger political and ideological forces that provide the impetus for creationism as a social movement and prompt

wealthy sympathizers to bankroll its organizations. Others may regard these sections as a distracting diatribe, and view Fetzer's unabashed characterization of the Bush administration and corporate miscreants as "fascists" as irresponsible agitprop. (I personally hold that some elements of the religious right, especially defenders of so-called "dominion theology," are quite accurately and appropriately described as "fascist." See Hedges 2006 and Goldberg 2007).

In summary, then, far better critiques of creationism are available. The main lesson that Fetzer's book teaches is that philosophy's attempt to legislate rationality by deploying its admittedly awesome logical weaponry, is an enterprise that should have gone out with Duns Scotus. Logical acuity is not enough; you have to know what you are talking about.

## REFERENCES

- Chalmers AE 1999. *What is This Thing Called Science?* 3rd ed. Indianapolis: Hackett.
- Gale G. 1979. *Theory of Science: An Introduction to the History, Logic, and Philosophy of Science*. New York: McGraw-Hill.
- Goldberg M. 2007. *Kingdom Coming: The Rise of Christian Nationalism*. New York: WW Norton.
- Hedges C. 2006. *American Fascists: The Christian Right and the War on America*. New York: The Free Press.
- Laudan L. 1988. The demise of the demarcation problem. In: Ruse M, editor. *But is it Science? The Philosophical Question in the Creation/Evolution Controversy*. Buffalo (NY): Prometheus. p 337-50.
- Kitcher P. 1982. *Abusing Science: The Case Against Creationism*. Cambridge (MA): MIT Press.
- Kitcher P. 2007. *Living With Darwin: Evolution, Design, and the Future of Faith*. Oxford: Oxford University Press.
- Pennock R. 1999. *Tower of Babel: The Evidence Against the New Creationism*. Cambridge (MA): MIT Press.
- Ruse M. 1982. *Darwinism Defended*. Reading (MA): Addison-Wesley.
- Sarkar S. 2007. *Doubting Darwin? Creationist Designs on Evolution*. Oxford: Blackwell.
- Shanks N. 2004. *God, the Devil, and Darwin: A Critique of Intelligent Design Theory*. Oxford: Oxford University Press.

## AUTHOR'S ADDRESS

Keith M Parsons  
University of Houston, Clear Lake  
2700 Bay Area Boulevard  
Houston TX 77058  
parsons@uhcl.edu

## CHARLES DARWIN

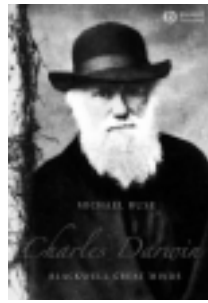
by Michael Ruse  
Malden (MA): Blackwell, 2008.  
337 pages

Reviewed by Doren A Recker

Michael Ruse's most recent book, like his *Darwinism and its Discontents* (2006; reviewed in *RNCSE* 2007 Jan-Apr; 27 [1-2]: 50-2), is a general work on Darwinism, including chapters on Darwin's biography, the history of Darwinian evolution, evidence for his theory, and chapters on religion and morality. This time, however, he is contributing to the Blackwell *Great Minds* series, which includes such titles as *Kant*, *Descartes*, and *Sartre*. So, as one might expect, there is more attention paid here to philosophical issues, and the general tone is also more philosophical than the earlier text. Still, the style is informal and should be both accessible to readers of various backgrounds and useful for readers at various levels of expertise in evolutionary (and philosophical) matters.

Most of the topics included here have been canvassed before, and Ruse has not changed positions on controversial topics such as the relationship(s) between Darwinism and religion or morality, or the status of neo-Darwinism (including the centrality of population genetics). The novelty here is (again) the concentration on Darwin's contributions to issues of primary concern to philosophers. In order to provide a sense of this approach, I will concentrate on one issue, evolution and morality.

The general importance of the relation between Darwinian evolution and ethics has increased recently, with texts such as Richard Weikart's *From Darwin to Hitler* and Ben Stein's recent movie



*Expelled* painting Darwinism red with innocent blood. The Discovery Institute (among others) is using these sources

to push the moral bankruptcy and culpability of evolutionary science to anyone who will listen and is sending copies of *Expelled* to "key policy makers" throughout the country (as reported in a recent fundraising letter from NCSE).

Even if justified, of course, such a claim does not affect the *scientific* status of Darwinian evolution. Concern with the Naturalistic Fallacy (attempting to derive an "ought" from an "is" or to defend a course of action ethically *because* it is deemed natural, and so on) has led more than a few philosophers and scientists (from Thomas Henry Huxley to Stephen Jay Gould) to refrain from finding *any* clues about morality in nature. The flip side of the Naturalistic Fallacy, however, is the Moralistic Fallacy (trying to derive "is not" from "ought not", or attacking the *scientific* status of a theory based on its allegedly unpalatable moral consequences). None of the evidence supporting evolutionary biology is changed one iota by attacking social policies allegedly based upon it. Still, such political attacks push evolutionists to investigate seriously what, if any, implications evolutionary biology may have for moral theory. This blending of philosophical and biological perspectives has been a concern of Ruse's for some time — his position on evolution and morality has been greatly influenced by Edward O Wilson, with whom he co-authored two articles in the mid-80s (Ruse and Wilson 1985, 1986) — and is addressed again in chapter 9 of *Charles Darwin*.

Basically, Ruse holds that human social behavior is largely under biological influence, often masked behind psychological predispositions ("epigenetic rules") to behave as we ought to. These predispositions are perceived as being based on objective moral rules,

applicable to all rational beings (p 239-40). Our innate moral intuitions allow for quick and dirty judgments about social challenges where actual calculations of costs and benefits (and/or duties) would take far too long to be useful in most day-to-day affairs (p 236). The biological mechanisms fueling the psychological motivations are kin selection and reciprocal altruism, well-known to evolutionary biologists and more than adequate for mapping onto our *actual* (as opposed to idealized) moral behavior (p 232, 237). Objective, transcendent moral rules are an *illusion* on this view, due to our objectifying (or reifying) strong moral sentiments (p 240). They are, however, "noble lies", since they provide motivational teeth for altruistic behavior and hold some of our other more selfish motivations in check for the sake of social intercourse. So Ruse promotes a skepticism about the objectivity of morality (there are no species-independent moral facts), while arguing for the possibility of (limited) altruism being a successful evolutionary adaptation (that is, evolution does not invariably favor selfishness or nature red in tooth and claw).

This represents one among many recent attempts to unpack the relationship between evolutionary theory and human morality, and the evolutionary models used (kin selection and reciprocal altruism) are accepted by the majority of interpretations (which eschew any use of group selection). With more sophisticated models of group selection (Sober and Wilson 1998) on the table, however, serious investigations of evolutionary morality may need to expand the usual armaments available to individual-level selection. In fact, another recent work interpreting Darwin and Darwinism from a more philosophical perspective (Lewens 2007) takes just this path. Lewens shows that group-level selection is both closer to Darwin's own views concerning evolution and morality, and also has better evidential support than many biologists acknowledge.

Another consideration involves the meaning of "objective moral facts." If moral realism is committed

---

Doren A Recker is Associate Professor and Head of the Philosophy Department at Oklahoma State University, specializing in the history and philosophy of science. He teaches courses on evolution versus creationism (including "intelligent design") and philosophy of biology, and is a board member of OESE (Oklomans for Excellence in Science Education).



to the view that legitimate “ought” statements refer to species-independent moral truths or moral rules that all rational creatures (human or not) must acknowledge, then Ruse and Wilson are right to disavow such moral facts. But if moral realism instead (as a counterpoint to relativism and subjectivism) need only be committed to species-wide moral facts, contingent on human evolutionary and cultural history, but independent of *individual* (or even individual cultures’) beliefs, then it is not so clear that objective morality need be an illusion. If our sentiments are structured by evolutionary history and our basic moral intuitions are grounded on strong emotional sentiments that include sympathy (and empathy) and motivate altruism, then it is possible that, at some level(s), moral claims can correspond with *human* truths, and in that sense, be factual.

This, too, would be controversial. But it is not clear that faith-based or other so-called absolutist moral codes can do any better at justifying objective, non-relative moral claims. There are at least as many disagreements within and across such views as there are among non-absolutist approaches. In the end, whether one accepts a position like Ruse’s, or prefers one that utilizes some notion of group selection, Darwinists will have no more difficulty supporting the grounds for moral behavior than will the faith-based approaches that blame Darwinism for the Holocaust. After all, anti-Semitism has rich roots in the history of Christianity, and this history includes at least as much intolerance and immoral behavior as does Darwinism (even when the latter is construed most broadly, and inaccurately).

#### REFERENCES

- Lewens T. 2007. *Darwin*. London: Routledge.
- Ruse M. 1984. The morality of the gene. *The Monist* 67: 167–99.
- Ruse M. 1986. Evolutionary ethics: A phoenix arisen. *Zygon* 21: 95–112.
- Ruse M. 1999. Evolutionary ethics: What can we learn from the past? *Zygon* 34: 435–51.
- Ruse M. 2006. *Darwinism and its Discontents*. Cambridge: Cambridge University Press.

Ruse M, Wilson EO. 1985. The evolution of ethics. *New Scientist* 17: 50–2.

Ruse M, Wilson EO. 1986. Moral philosophy as applied science. *Philosophy* 61: 173–92.

Sober E, Wilson DS. 1998. *Unto Others: The Evolution and Psychology of Unselfish Behavior*. Cambridge (MA): Harvard University Press.

Wilson EO. 1998. The biological basis of morality. *The Atlantic Monthly* 281: 53–70.

#### AUTHOR’S ADDRESS

Doren Recker  
Philosophy Department  
308 Hanner Hall  
Oklahoma State University  
Stillwater OK 74078-5064  
doren.recker@okstate.edu

## BACK TO DARWIN: A RICHER ACCOUNT OF EVOLUTION

edited by John B Cobb Jr  
Grand Rapids (MI): William B Eerdmans, 2008. 434 pages

Reviewed by  
**Timothy Shanahan**

**B**ack to Darwin: A Richer Account of Evolution consists of a collection of two dozen papers presented at an academic conference on evolution and religion organized by the Center for Process Studies in Claremont, California, in October 2004. The volume consists of an editor’s introduction, four topical sections containing four to nine essays each, and an appendix. Most of the essays are contributed by authors whose names will be familiar to anyone who has browsed the literature in what might be called “the reconciliatory genre of science and religion writing,” especially as it concerns evolution. The editor makes no bones about the fact that whereas he has attempted to honor the integrity of each author’s contribution(s), he has

*Timothy Shanahan is Professor of Philosophy at Loyola Marymount University, Los Angeles. He holds degrees in biology, philosophy, and in the history and philosophy of science. Among his books are The Evolution of Darwinism (Cambridge: Cambridge University Press, 2004) and The Provisional Irish Republican Army and the Morality of Terrorism (Edinburgh: Edinburgh University Press, 2009).*

also selected, organized, and contextualized this material in order to highlight how a “process perspective” can remedy some of the defects of current neo-Darwinian thinking. (“Process thought” is an elaboration and application of ideas developed by Alfred North Whitehead in the 1920s that takes events, processes, and integration rather than materialistic and dualistic ways of thinking as metaphysically basic.)

Section I consists of “Background Materials.” The essays in this section seek to convey a history of the problem of science and religion, to provide the basics of contemporary evolutionary theorizing, and to survey some of the tensions between Darwinian ideas and religious belief. Section II aims “To Broaden and Diversify Evolutionary Theory” by integrating scientific ideas from thermodynamics, quantum physics, and chemistry into evolutionary thinking, as well as by promoting the underappreciated biological ideas of neo-Lamarckism, symbiogenesis, Gaia, and the Baldwin effect. Section III takes up “The Philosophical Challenge to Neo-Darwinism.” The inclusion of the term “Neo-Darwinism” in the title of this section alerts the reader to expect a critique, as this term is seldom used by contemporary biologists in describing their work, but occasionally crops up in the writings of authors providing an historical account of the synthesis of Darwin’s theory of natural selection with Mendelian genetics, or by those about to launch into a critique of Darwinian ideas and who therefore need to fix in their sights the intended target. In this case it is the latter. The main theme of the essays in this section is that Darwinism, as currently conceived, needlessly narrows and limits the nature of evolution in a way that excludes all consideration of subjectivity, emergence, and purpose. The final section, Section IV, addresses the issue of “Evolution and God” by posing the question, “Can a scientific account of the world be incorporated into a theistic one?” The essays in this section tend to answer that question in the affirmative by seeking to modify both theology and science in order

to integrate them into a unified vision of reality.

It would be impossible to summarize each of the individual essays here. But certain recurring themes stand out. Unlike books by outspoken atheists (such as by Richard Dawkins) that attempt to use Darwin to demolish religious belief, the contributors to this volume seek to find a rapprochement between an affirmation of Darwin's fundamental ideas and religious belief. Its spirit is fundamentally reconciliatory rather than antagonistic — seeking integration rather than opposition. What unites the essays (and accounts for the volume's title) is the contributors' affirmation of Darwin's demonstration of the fact of biological evolution conjoined with a concern to correct certain assumptions and overstatements in the development of evolutionary theory after Darwin. Of particular concern are certain "extreme" statements of evolution according to which genes are conceived as being unaffected by their environments, and in which more inclusive life-forms (for example, organisms) essentially disappear from explanations of evolutionary change. Hence the authors propose to "go back" to reaffirm Darwin's major, distinctive ideas without necessarily embracing subsequent restrictive extensions and elaborations of Darwin's ideas that underwrite (or presuppose) atheistic views.

The volume will be of interest to anyone concerned to explore alternatives to the science-religion debate as framed by the most uncompromising proponents of godless evolution, on the one hand, and by advocates of "creation science" or "intelligent design", on the other. Perhaps of particular interest for readers of this journal are the views of the volume's editor concerning the teaching of evolution in public schools. While agreeing with the vast majority of biologists that "creation science" and "intelligent design" have no place in public school science education, and affirming that schools should avoid teaching that evolution shows signs of being directed or guided by an intelligent agent, he nonetheless maintains that the teaching of

evolution in public schools should also avoid saying or implying that the evolutionary process is wholly purposeless and devoid of values. Yet rather than leave it at that, as many educators might be inclined to do, Cobb explicitly harnesses the essays in the book to show how such a stance can be underwritten by a theistically-friendly-yet-neutral metaphysics (process philosophy) that gives each side in the evolution-creation/design debate something (but not everything) it wants: naturalism (of a sort) without dogmatic atheism; purpose and values without fundamentalism or refurbished natural theology.

Of course, precisely because this approach attempts to chart a middle course between the polarized extremes in the creationism/evolution dispute, it will seem satisfactory to neither side. More generally, as an attempt at a philosophical *via media* it is bound to suffer from the fate of nearly every such attempt; or as I explain to my students, it will be yet another confirmation of what I like to call "Shanahan's Law": For any fundamental philosophical problem, there will be solutions that lie at either extreme that are admirably clear but which lead to enormous difficulties and hence will be hard to justify; and there will be a range of intermediate positions with greater but varying degrees of plausibility, but burdened by corresponding unclarity sometimes bordering on outright obscurity. The philosophical dilemma of clarity versus plausibility is hardly unique to the science-religion dispute, or to the project of this book, and therefore should not dissuade readers from plunging in. Indeed, to the extent that this volume encourages readers to consider intriguing alternatives to the most vocally defended poles of the debate about the teaching of evolution in public schools, this volume deserves a wide readership.

#### **AUTHOR'S ADDRESS**

Timothy Shanahan  
Department of Philosophy  
Loyola Marymount University  
One LMU Drive  
Los Angeles CA 90045

## **EVOLUTIONARY CREATION: A CHRISTIAN APPROACH TO EVOLUTION**

by Denis O Lamoureux  
Eugene (OR): Wipf and Stock,  
2008. 493 pages

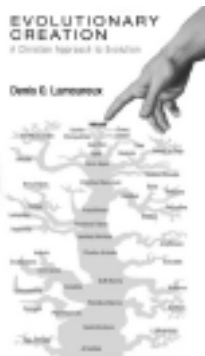
### **Reviewed by Stephen J Godfrey**

As indicated by its title, this primarily theological work is aimed at the Christian anti-evolution audience and at Christians who accept evolution but want to think further about how that acceptance comports, or can be made to comport, with their faith. Denis Lamoureux (who holds doctorates in both theology and biology) is to be thanked for this attempt to persuade young-earth creationists (YECs), by a close examination of the Bible, science, and history, that the expectations they have of the first eleven chapters of the Bible are simply wrong. Furthermore, he contends that their widely held beliefs are also detrimental to Christianity because their mistakes throw up stumbling blocks in the way of the scientifically literate who might have an interest in this faith. His "in" with this audience is that he is a passionate Evangelical Christian and makes no apologies for boldly affirming his faith in Jesus. His intimate familiarity with the audience he wants so desperately to move in the direction of accepting the reality of evolution will certainly help.

My optimism, however, about how influential this work will be is tempered by how seemingly ineffective other similar attempts have been. Lamoureux is asking his intended YEC audience to swallow a very large pill. From having been

---

*Stephen J Godfrey is the Curator of Paleontology at the Calvert Marine Museum and Research Collaborator at the National Museum of Natural History, the Smithsonian Institution, and the Natural History Museum of Los Angeles County. His latest book is Paradigms on Pilgrimage: Creationism, Paleontology, and Biblical Interpretation, co-authored with Christopher R Smith (Toronto: Clements Publishing, 2005).*



a YEC, I know that most will choke on Lamoureux's central argument, which is that the science and history in Genesis chapters 1-11 represent only the "science

and history of the day." They are not factual but rather only "incidental vessels", which nevertheless deliver divinely inspired eternal spiritual truths. But for many Christians, the Bible, divinely inspired, is historically and scientifically accurate on any subject on which it speaks. They consider anathema the notion that the Genesis accounts of creation, the origin of humans, the Flood, and the origin of languages are all wrong. Young-earth creationists do not take kindly to the notion that what they believe to be literally true and scientifically accurate are no more than incidental vessels. Although the original Hebrew audience had no reason not to believe the science and history of their day, Lamoureux is asking YECs not to believe this intuitive and originally intended interpretation of Genesis; he is to be commended for doing his best to fight an uphill battle.

YECs will be quick to ask: If the Genesis stories are only incidental vessels, what is our guarantee that the faith and spiritual components of these stories are true? For the vast majority of young-earth creationists, if the tangible scientific and historic elements of Genesis 1-11 are shown not to be true, then they no longer prove the trustworthiness and accuracy of the parts of the story that are not scientifically testable. In their minds, if the Bible gets its science and history wrong, then there is no reason to place any confidence in those parts of the Bible that demand faith (they possess a conditional faith). But to a YEC it is even more devastating than this, because if all ancient biblical stories related to Creation and the Flood are wrong, those errors suggest that the divinely inspired eter-

nal spiritual truths are also not true. If this is the case, then the burden of proof in the trustworthiness of the Bible as having had a divine origin increases to an uncomfortable level. This terrifying thought is accompanied by a dreaded realization that the hand of atheists and skeptics might just have been strengthened.

What Lamoureux is asking YECs to do with Genesis would be akin to also asking them to believe that none of the miracles that Jesus did were done as they are recorded in the Gospels. The miracles are the guarantor that Jesus was who he claimed to be, God incarnate, and that his spiritual and intangible claims are also to be taken seriously. Consider the New Testament account of when John the Baptist was imprisoned and he sent some of his disciples to ask Jesus if he was "... the one who was to come, or should we expect someone else?" (Luke 7:18-23). At the time this narrative took place, it is evident that John was struggling to reconcile his mission with his imprisonment. The important point here is that Jesus confirmed his authenticity and credentials as the "one who was to come" (that is, their Messiah) through the miracles that he performed. The witnessed and verifiable miracles guaranteed that Jesus was the Messiah.

But what if Jesus had simply said to John's disciples: "Sorry, no miraculous signs; absolutely nothing out of the ordinary here. John is simply going to have to believe that I am the 'one who was to come.'" What would John have done with that

news, and would we know about Jesus today? But it is this very lack of tangible proof (both scientific and historic) in Genesis that Lamoureux is expecting YECs to overlook and yet still accept the spiritual truths as having had a divine origin. Instead of making the paradigm shift, many YECs will prefer to continue to retreat into denial and refuse to relinquish their anti-evolutionary mindset.

I agree with Lamoureux that Genesis represents the science and history of the day, but he should have emphasized more forcefully that it also reflects the religious and spiritual level of understanding of the day. Genesis does not present all there is to know about God. The Bible itself documents a progressive (an evolutionary-like) revelation of God, as that understanding continues to grow and change even today.

As valuable as this book would be to conservative Christian students, it will not likely darken the door of any American public school. Lamoureux's bold profession of faith in and love for Jesus will ensure that it is kept at bay. Nevertheless, I will be recommending this book to anyone who might have even the slightest interest in moving from an anti-evolutionary world view.

#### AUTHOR'S ADDRESS

Stephen J Godfrey  
Department of Paleontology  
Calvert Marine Museum  
PO Box 97  
Solomons MD 20688  
Godfresj@co.cal.md.us





NATIONAL CENTER FOR SCIENCE EDUCATION  
PO Box 9477  
Berkeley CA 94709-0477

Non-Profit Org.  
U.S. Postage  
PAID  
Permit 1197  
Berkeley CA

## Change Service Requested

29(2)

### EDITOR

Andrew J Petto  
Department of Biological Sciences  
University of Wisconsin, Milwaukee  
PO Box 413, Milwaukee WI 53201-0413  
(414) 229-6784; fax (414) 229-3926

### SUPPORTERS

Bruce Alberts, *UC San Francisco*  
Francisco J Ayala, *UC Irvine*  
Frederick Borsch, *LTSP*  
Stephen G Brush, *U MD*  
Sean B Carroll, *U WI*  
Johnnetta B Cole, *Bennett College*  
Joel Cracraft, *AMNH*  
Brent Dalrymple, *OR State U*  
James E Darnell Jr, *Rockefeller University*  
Richard E Dickerson, *UCLA*  
Robert H Dott Jr, *U WI*  
Niles Eldredge, *AMNH*  
Milton Fingerman, *Tulane*  
Douglas J Futuyma, *SUNY Stony Brook*  
Alfred G Gilman, *U Texas SMC*  
Laurie Godfrey, *U MA*  
Donald Hornig, *Harvard*  
Duane E Jeffery, *Brigham Young*  
Donald Johanson, *Inst Hum Origins*  
Patricia Kelley, *UNC Wilmington*  
Philip Kitcher, *Columbia*  
Richard C Lewontin, *Harvard*  
Lynn Margulis, *U MA*  
Keith B Miller, *Kansas State U*  
Kenneth Miller, *Brown*  
David Morrison, *NASA Ames*  
Bill Nye, *The Science Guy*  
Robert L Park, *U MD*  
James Randi, *Conjuror*  
Michael Ruse, *Florida State U*  
James W Skehan, *SJ, Weston Obs*  
Elliott Sober, *U WI*  
Frank Sonleitner, *U OK*  
Richard Stucky, *Denver Mus Nat & Sci*  
Neil DeGrasse Tyson, *AMNH*  
Marvilee Wake, *UC Berkeley*  
Mary Jane West-Eberhard, *Smithsonian Inst*  
Tim D White, *UC Berkeley*

### OFFICERS AND DIRECTORS

Kevin Padian, *President*  
Elizabeth K Stage, *President-Elect*  
Jack B Friedman, *Past President*  
Robert M West, *Secretary/Treasurer*  
Brian Alters, *Director*  
John R Cole, *Director*  
Barbara Forrest, *Director*  
Martha J Heil, *Director*  
Duane E Jeffery, *Director*  
Michael McIlwrath, *Director*  
Andrew J Petto, *Director*  
Frank J Sonleitner, *Director*  
Lorne Trotter, *Director*

Eugenie C Scott, *Executive Director*  
Stanley L Weinberg, *Founder*

*NCSE is a nonprofit, tax exempt corporation  
affiliated with the American Association  
for the Advancement of Science.*

## Membership in the National Center for Science Education brings you

- One year's subscription to *Reports of the National Center for Science Education* (6 issues)
- Participation in NCSE's diverse efforts to promote and defend the integrity of science education

## MEMBERSHIP / SUBSCRIPTION / DONATION

Name \_\_\_\_\_  
Address \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_  
Home Phone \_\_\_\_\_ Work Phone \_\_\_\_\_

Occupation \_\_\_\_\_

☐ Check here if NCSE may share your name with activists in your state

☐ Check here if you object to our sharing your name with other nonprofit organizations

### NCSE MEMBERSHIP

**ONE YEAR** US: \$30 Foreign Air: \$39

**LIFETIME** \$600

\$

### TAX DEDUCTIBLE CONTRIBUTION TO NCSE

\$

### BACK ISSUES

*NCSE Reports / C/E Newsletter* (Vol 1-16, \$3 per issue; \$18 per volume; all 16 vols, \$150)

*C/E Journal* (1-9 copies, \$6 each; 10 or more, \$5 each; full set, nrs 1-39, \$150)

*RNCSE* (Vol 17-28, \$5 per issue; \$24 per volume)

\$

### SHIPPING

\$1.25 for 1 issue, add \$1 for each additional issue; maximum of \$10

\$

### TOTAL

☐ Check (US dollars)

Charge to: ☐ VISA ☐ MasterCard ☐ AmEx

\$

Credit Card Number \_\_\_\_\_

Expiration Date \_\_\_\_\_

Name as it appears on card \_\_\_\_\_

Signature \_\_\_\_\_

### SUBSCRIBER INFORMATION

Subscriptions are fully tax deductible. NCSE is tax exempt under Federal IRS Code 501(c)(3) and the corresponding provisions of the California law. Amounts paid to NCSE are tax-deductible to the extent permitted by law.

### MISSING ISSUES

If your issue fails to arrive or is badly damaged in transit, send us the date of issue and we will rush you a replacement.

Please mail all correspondence about your subscription to NCSE, PO Box 9477, Berkeley, CA 94709-0477 or call (510) 601-7203 or (800) 290-6006 or e-mail us at NCSE@ncseweb.org

### MOVING TO A NEW ADDRESS?

Let us know your new address as early as possible and we will update our records of your subscription accordingly. Please allow 4 weeks for an address change.

Printed on recycled paper.

