

Virtual Mentor

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Op-Ed

Citizen MD

by Paul Costello

I'm afraid we live in loopy times. How else to account for the latest entries in America's culture wars: science museum docents donning combat gloves against rival fundamentalist tour groups and evolution on trial in a Pennsylvania federal court. For those keeping score, so far this year it's Monkeys: 0, Monkey Business: 82. That's 82 evolution versus creationism debates in school boards or towns nationwide—this year alone. [\[1\]](#)

This past summer, when most Americans were distracted by thoughts of beaches and vacations or the high price of gasoline (even before the twin hits of Katrina and Rita), 2 heavy-weight political figures joined the President of the United States to weigh in on a supposedly scientific issue. US Senate Majority Leader Bill Frist, Arizona Senator John McCain, and President George W. Bush each endorsed the teaching of intelligent design alongside evolution in the science classroom. Can anyone reasonably convince me that these pronouncements were not just cynical political punditry but, rather, were expressions of sincere beliefs?

So you have to ask yourself in light of all of these events, are we headed back to the past with no escape in the future? Are we trapped in a new period of history when science, once again, is in for the fight of its life?

In times like these, as inundated as we are by technical wizardry, one might conclude that American technological supremacy and know-how would lead, inevitably, to a deeper understanding or trust of science. Well, it doesn't. Perhaps just the opposite is true. Technology and gee whiz gadgetry has led to more suspicion rather than less. And a typical American's understanding of science is limited at best. As far as evolution is concerned, if you're a believer in facts, scientific methods, and empirical data, the picture is even more depressing. A recent survey by the Pew Forum on Religion and Science found that 64 percent of respondents support teaching creationism side by side with evolution in the science curriculum of public schools. A near majority—48 percent—do not believe that Darwin's theory of evolution is proven by fossil discoveries. Thirty-three percent believe that a general agreement does not exist among scientists that humans evolved over time [\[2\]](#).

What if we become a nation that can't chew gum, walk down the street, and transplant embryonic stem cells all at the same time? Does it matter?

New York Times journalist Cornelia Dean, who balances her time between science reporting for the *Times* and lecturing at Harvard, told me that she believes that science stands in a perilous position. “Science, as an institution, has largely ceded the microphone to people who do not necessarily always embrace the scientific method,” she says. “Unless scientists participate in the public life of our country, our discourse on a number of issues of great importance becomes debased” [3].

Others, such as journalist Chris Mooney, point to the increasing politicization of science as a pollutant seeping into our nation’s psyche. In his recent book, *The Republican War on Science*, Mooney spells out the danger of ignorance in public life when ideology trumps science.

Science politicization threatens not just our public health and the environment but the very integrity of American democracy, which relies heavily on scientific and technical expertise to function. At a time when more political choices than ever before hinge upon the scientific and technical competence of our elected leaders, the disregard for consensus and expertise—and the substitution of ideological allegiance for careful assessment—can have disastrous consequences [4].

Jon D. Miller, PhD, a political scientist on faculty at Northwestern University’s School of Medicine, believes that the sophisticated questions of biology that will confront each and every American in the 21st Century will require that they know the difference between a cell and a cell phone and are able to differentiate DNA from MTV. For decades, Miller has been surveying Americans about their scientific knowledge. “We are now entering a period where our ability to unravel previously understood or not understood questions is going to grow extraordinarily,” says Miller. “As long as you are looking at the physics of nuclear power plants or the physics of transistors [all 20th Century questions]...it doesn’t affect your short-term belief systems. You can still turn on a radio and say it sounds good but you don’t have to know why it works. As we get into genetic medicine, infectious diseases...if you don’t understand immunity, genetics, the principles of DNA, you’re going to have a hard time making sense of these things” [5].

Culture Wars and 82 Evolution Debates

Yet in some corners today, knowledge isn’t really the problem. It’s anti-knowledge that is beginning to scare the scientific community. Glenn Branch, deputy director of the National Center for Science Education, calls 2005 “a fairly busy year” when he considers the 82 evolution versus creationism “flare-ups” that have occurred at the state, local, and individual classroom levels so far. According to a spring 2005 survey of science teachers, the heat in the classroom was not coming from Bunsen burners or exothermic reactions but rather from a pressure on teachers to censor. The National Science Teachers Association’s informal survey of its members found that 31 percent of them feel pressured to include creationism, intelligent design, or other nonscientific alternatives to evolution in their science classroom [1]. Classrooms aren’t the only places feeling the heat. Science museums have also become conflict zones. In her *New York Times* article, *Challenged by Creationists, Museums Answer Back*, Dean detailed special

docent training sessions that will enable the guides to be better armed “to deal with visitors who reject settled precepts of science on religious grounds” [6].

These ideological battles aren't likely to vanish any time soon. If anything, an organized and emboldened fundamentalist religious movement buttressed by political power in Washington will continue to challenge accepted scientific theory that collides with religious beliefs. So one must ask, is it too farfetched to see these ideological battles spilling over into areas of medical research and even into funding at the National Institutes of Health?

Now I am not asking for a world that doesn't respect religious belief. My education as a Roman Catholic balanced creed and science. In the classroom of my youth, one nun taught creationism in religion class while another taught evolution in science, and never the twain did meet.

Where Is the Medical Community?

The medical community as a whole has been largely absent from today's public debates on science. Neither the American Medical Association nor the American Psychiatric Association has taken a formal stand on the issue of evolution versus creationism. When physicians use their power of political persuasion in state legislatures and the US Congress, it's generally on questions more pertinent to their daily survival—Medicare reimbursement, managed care reform, and funding for medical research. Northwestern's Miller believes that the scientific community can't fight the battle alone and that, as the attacks against science accelerate, the medical community will have to use its privileged perch in society to make the case for science. “You have to join your friends, so when someone attacks the Big Bang, when someone attacks evolution, when someone attacks stem cell research, all of us rally to the front. You can't say it's their problem because the scientific community is not so big that we can splinter 4 or more ways and ever still succeed doing anything” [5].

So what does one do? How can a medical student, a resident, or a physician just beginning to build a career become active in these larger public battles? Burt Humburg, MD, a resident in internal medicine at Penn State's Hershey Medical Center, is one role model. He's been manning the evolutionary ramparts since his medical school days in Kansas in the late 1990s when he became active in Kansas Citizens for Science. On a brief vacation from his residency volunteering as a citizen advocate for the federal trial in Pennsylvania, he said education is the key role for the physician. While he realizes that medical students, residents and physicians might not view themselves as scientists, per se, he sees himself and his colleagues as part of the larger scientific collective that can't afford to shirk its duty. “The town scientist is the town doctor, so whether we want it or not, we have the mantle—the trappings—of a scientist” [7].

It is time for the medical community, through the initiative of individual physicians, to address not only how one can heal thy patient, but also how one can heal thy nation. There are many ways to get involved; from the most rudimentary—attending school board meetings, sending letters to the editor, and volunteering at the local science

museum—to the more demanding—running for office, encouraging a spouse or partner to do so, or supporting candidates (especially financially) who are willing to speak out for science. As Tip O’Neill, the larger-than-life Speaker of the House of Representatives, famously declared, “All politics is local.” Speak out for science. Isn’t that a message that should be advanced in every physician’s office?

Northwestern’s Jon Miller concedes that speaking out may come with a price, “It won’t make...[physicians]...popular with many people but is important for any profession, particularly a profession based on science” to do so [5]. Consider this: shouldn’t civic leadership be embedded in the mind of every blooming physician? In the end, doesn’t combating this virulent campaign of anti-knowledge lead us back to that old adage of evolutionary leadership by example, “Monkey see, monkey do?” Seize the day, Doc.

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