Swift-boating Darwin: alternative or complementary science

American scientists breathed a collective sigh of relief last December after Judge John Jones ruled against teaching intelligent design (ID) in the classrooms of science. “The overwhelming evidence is that Intelligent Design is a religious view, a mere re-labeling of creationism and not a scientific theory,” Jones declared in his 139-page decision, issued in Dover, PA. “It is an extension of the Fundamentalists’ view that one must either accept the literal interpretation of Genesis or else believe in the godless system of evolution . . . The evidence presented in this case demonstrates that [intelligent design] is not supported by any peer-reviewed research, data or publications.” (1, 2) But Dover isn’t over.

Proponents of ID stubbornly refused to give up their campaign: “A thousand opinions by a court that a particular scientific theory is invalid will not make that scientific theory invalid,” claimed Richard Thompson, of the Thomas More Law Center, a group long devoted to Swift-boating Charles Darwin. The center had previously boasted that when ID had been inserted into the Dover science curriculum “biology students in this small town received perhaps the most balanced science education regarding Darwin’s theory of evolution than any other public school student in the nation.” (3) Robert Crowther, director of the Discovery Institute, a Seattle-based think tank (so to speak) complained to The New York Times, that Judge Jones’s decision “asserts the factually false claim that ID proponents haven’t published peer-reviewed papers. A number of peer-reviewed papers and books are listed on the Discovery Institute website at www.discovery.org/csc/.” (4, 5) William Demski, a mathematician and fellow of the Discovery Institute, insisted that “I think the big lesson is, let’s go to work and really develop this theory and not try to win this in the court of public opinion . . . the burden is on us to produce.” (1) Demski, you’ve got a heck of a job to do.

The website of the Discovery Institute reveals that the “peer-reviewed evidence” for ID consists of four articles. Each presents a theoretical argument that fails the test of experimental validation. Each has appeared in a publication devoted to pure speculation, including the occasional Proceedings of the Biological Society of Washington; the thrice-yearly Italian/Indian review Rivista di Biologia/Biology Forum; the yearly Dynamical Genetics; or the every-other-year Proceedings of the Second International Conference on Design and Nature (5). One concludes that active investigators of ID do not stoop to rapid publication. Nor does prestige dictate their choice of venue. High Wire Press (6), where 70 of the highest-cited journals have been archived since 1948, lists Darwin’s “natural selection” in 271 titles—almost all experimental—whereas “intelligent design” appears in the title of but a single article, a review published in the Journal of Theological Studies (7). Alas, ID loses out to another system of alternative science: “Mesmer” or “Mesmerism” appears in 20 titles devoid of experimental promise.

ALTERNATIVE AND COMPLEMENTARY SCIENCE

Although ID clearly lacks support in the literature of experimental biology, it remains a powerful notion that is no longer limited to extreme fundamentalists. ID may be coming soon to a science classroom in your neighborhood. At least ten states have legislation pending that would declare ID an alternative, or complementary, view to Darwinian evolution. And while Darwin’s “theory” of evolution is as well-accepted by scientists as the heliocentric theory of Galileo or the gravitational theories of Newton, it’s easy to see why true believers resist the facts of common descent and natural selection. As Judge Jones decided, Darwinian evolution clearly contradicts “the literal interpretation of Genesis” and resolving that contradiction is difficult at best.

But, I’m afraid that not only creationists or evangelists have questioned the experimental basis of science. The notion that there are alternative or complementary systems of medicine other than those based on the laws of physics and chemistry has swept not only daytime television, but captured the hearts and minds of our legislatures and our elite universities, and has found a home on the campus of the NIH (8, 9). The National Center for Alternative and Complementary Medicine explains why it is funding work based on Ayurvedic notions of animal magnetism:

This vital energy or life force is known under different names in different cultures, such as qi in traditional Chinese medicine, ki in the Japanese Kampo system, doshas in Ayurvedic medicine, and elsewhere as prana, etheric energy, fohat, orgone, odic force, mana, and homeopathic resonance. (10)

I’m afraid that our current tolerance of homeopathic, chiropractic, Ayurvedic, holistic, crystal-based, or aroma-driven modes of healing has helped to clear the way for the alternative or complementary science of intelligent design. Once advocates of folk-based remedies persuaded the public that there are alternative or complementary explanations of what ails us, why not
accept faith-based alternative or complementary explanations for how we came about? If the laws of chemistry and physics (e.g., \( PV=nRT \)) need not apply to medicine, why should we rely on the laws of evolution such as natural selection or the Hardy Weinberg equation of population genetics (\( p^2+2pq+q^2=1 \))?

We live in an open, diverse society, disdainful since the 1960s of the hard facts of science. That disdain has both intellectual and religious origins: the intellectual roots are chiefly French and the religious roots, American. On the one hand, the best and the brightest among us have been tutored in what Nicholas Kristof of The New York Times called the “Hubris of the Humanities (11).” We have breathed the air of a postmodern era in which melancholic disciples of Michel Foucault proclaim “the end of our great faith in Progress.” (10) On the other hand, American science teachers in evangelical schools teach students that God created the world in six 24 h days (12). No wonder that only 40 percent of Americans believe in evolution and that only 13 percent know what a molecule is (9). There are more professional astrologers than astronomers (10,000 vs. 800) in our country and more who preach metaphysics than physics (422,000 ministers vs. 16,000 physicists) (13, 14).

**NEW YORK AND NANCY**

The Dover decision was a landmark for those who value fact over faith in the realm of science. Happily, there have been other such moments. Two recent public art exhibitions recall episodes as important to the life of science as that ruling by Judge Jones. The American Museum of Natural History mounted a comprehensive and compelling show on the life, work, and everyday impact of Charles Darwin. Illustrating Theodosius Dobzhanky’s aphorism that nothing makes sense in biology except in the light of evolution (15), the exhibition has attracted crowds of every age and hue in New York, and will travel to Chicago, Toronto, and London.

Simultaneously, France celebrated 250 years of Light and the Enlightenment in a splendid exhibition at Nancy that served to illustrate Denis Diderot’s argument that one can’t traffic in metaphysics or morality without understanding the facts of natural science (16). Organized by Jean-Pierre Changeux, the dazzling polymath of the Collège de France (and a member of our editorial board), the show featured original texts, scientific artifacts, prints, and masterly paintings that documented the triumph of scientific light and reason over the forces of “obscurantisme” (the Endarkenment). Exhibits ranged from Newton’s spectrum to Mme. de Châtelet’s equations to modern synaptic transmission. It was good to see that the galleries at Nancy in December were as packed as the corridors in Manhattan or that courtroom in Dover.

**HUXLEY AND WILBERFORCE**

The Darwin show in New York called attention to the famous “monkey” debate at the Oxford Museum of Natural History on June 30, 1860 (17). The great debate began with a two hour-long treatise by Professor John William Draper of the Medical Department of New York University, invited as the major American champion of Darwinist thought. Thomas Huxley remembered Dr. Draper at Oxford as “of course bringing in a reference to the Origin of Species which set the ball rolling.” The details of what followed are controversial, but one exchange is engrained in the story of evolution.

Bishop Wilberforce—a premature televangelist and equivocal success as a mathematician—spoke next and taunted Huxley by asking if it was on his grandmother’s or his grandfather’s side that he was descended from apes. Huxley replied, famously, “I asserted, and I repeat, that a man has no reason to be ashamed of having
an ape for a grandfather. If there were an ancestor whom I should feel shame in recalling, it would rather be a man, a man of restless and versatile intellect, who, not content with an equivocal success in his own sphere of activity, plunges into scientific questions with which he had no real acquaintance, only to obscure them by an aimless rhetoric, and distract the attention of his hearers from the real point at issue by eloquent digressions and skilled appeals to religious prejudice.” (17)

FRANKLIN AND MESMER

The Nancy exhibit displayed an earlier memento of a similar setback for Unreason. It was the report of a Royal Commission appointed by Louis XVI to look into the activities of Franz Anton Mesmer (1734–1815). Mesmer had intruded his notion of animal magnetism into the highest level of French society. His doctrines leaned heavily on the Swedenborgian notion that matter is a subset of Mind, a notion antithetical to the teachings of the philosophes and the Academy itself. As we’ve learned from Robert Darnton, there was a disturbing connection between the rise of Mesmeric belief and the end of the Enlightenment in France (18). Mesmer taught that disease resulted from various obstructions to the flow of a magnetic “fluid” or vital energy in the body. In a Mesmeric session, patients sat about in circular tubs and communicated the fluid by means of a rope looped about them all and by linking hands to form a mesmeric “chain.” Soft music, played on wind instruments, a pianoforte, or a glass harmonica reinforced the waves of ethereal energy that “entranced” the patient (19).

Reason struck back when the king appointed two commissions to investigate these practices. Dr. Guillotin (of the blade) headed one group of four prominent doctors from the Faculty of Medicine. The other commission was headed by Ambassador Benjamin Franklin (of the lightning) and boasted five members of the Academy of Sciences including Bailly (of Jupiter) and Lavoisier (of oxygen). The commissioners spent weeks listening to Mesmeric theory and observing how its patients fell into fits and trances. They found false a report that being mesmerized through a door caused a woman patient to have a crisis. In Franklin’s garden at Passy, a “sensitive” patient was led to each of five trees, one of which had been mesmerized. As the chap hugged each in turn to receive the vital fluid, he fainted at the foot of the wrong one. At Lavoisier’s house, four normal cups of water were held before a mesmerized woman; the fourth cup produced convulsions, yet she calmly swallowed the mesmerized contents of a fifth, which she believed to be plain water. The commissioners concluded that there was no vital fluid: “the fluid without imagination is powerless, whereas imagination without the fluid can produce the effects of the fluid.”

I’m reminded of Danny Kaye in “The Court Jester”: “The pellet with the poison’s in the vessel with the pestle; the chalice from the palace has the brew that is true!”

The verdict at Dover reminds us that the facts of evolution, no less than the laws of chemistry and physics, are the brew that is true.

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doi:10.1096/fj.06-0301

REFERENCES