

EVOLUTION AND CREATIONISM

Shapes of a Wedge

Steve Olson

The opponents of evolution are endlessly creative, modifying their arguments to take advantage of new intellectual opportunities. When efforts to introduce “creation science” into biology classrooms stalled in the late 1980s and 1990s, a new generation of creationists downplayed their scriptural inspiration and pointed instead to what they saw as unmistakable signs of “intelligent design” in living organisms. More recently, intelligent design creationists have been forging alliances with some members of the discipline known as the rhetoric of science, which holds that scientific conclusions inevitably emerge from a process of persuasion, giving rise to the odd sight of conservative Christians making common cause with radical deconstructionists.

But the fundamental argument of those opposed to naturalism has remained unchanged since theologian William Paley wrote in 1802 of finding a watch lying on a heath. Just as the intricacy and purpose of a watch cannot be explained without positing the existence of a watchmaker, Paley insisted, many aspects of the natural world cannot be explained as the product of naturally occurring mechanisms. Therefore, those parts of the world must have been created by a supernatural being acting with conscious intent.

Darwin, Design, and Public Education contains essays by many of the leading proponents of this view, along with a handful of rejoinders from science educators (among whom I include scientists who have engaged with the controversy). The core of the volume is a familiar litany of objections to particular aspects of evolutionary theory, including life’s origins, the Cambrian radiation, Haeckel’s drawings of embryos, industrial melanism, and the complexity of biological molecules. But the most important essays are concentrated toward the beginning and end, where the volume’s organizers lay out their broader educational and social agenda. (Both editors are fellows of the Seattle-based Discovery Institute’s Center for Science and Culture, formerly the Center for the Renewal of Science and Culture, the organization that spearheads intelligent design in the United States.) Regardless of the validity of the sci-

entific criticisms, they say, educators have a responsibility to “teach the controversy.” As University of Memphis communication professor John Angus Campbell writes with fine rhetorical flourish, teachers must “honor in science education the integrity of informed dissenting opinion that grounds our American tradition of unity in diversity within politics, religion, and culture.”

Such exhortations may play well with legislators and school board members, who appear to be a major target of this volume. For science educators, *Darwin, Design, and Public Education* serves the valuable purpose of demonstrating the sophistication of those opposed to the teaching of evolution. Campbell’s main essay carefully dissects Darwin’s refutation of Paley’s ideas in *The Origin of Species*, arguing that if a disputatious approach was good enough for Darwin it’s good enough for science teachers today. Other essays contend that intelligent design is not religiously motivated and therefore deserves to be taught in schools, analyze the varied meanings of the word evolution, and call upon science teachers to at least let evolution’s critics into the classroom. The volume’s legal, pedagogical, and social arguments—in contrast to much of its scientific discussion—are nuanced and informed.

Scientists face a dilemma in deciding how to respond to anti-evolutionists. Demonstrating the scientific errors committed by creationists requires a thorough familiarity with their claims. But studying intelligent design hypotheses can be frustrating because they seem so obviously inspired by nonscientific considerations. When rebutted, intelligent design theorists tend to ignore the objections, claim that all will be revealed in the future, or rework their arguments to draw the same conclusions in a slightly different way. Essentially, the worldviews of scientists and intelligent design theorists fail to intersect. Scientists seek to explain the natural world, whereas creationists seek to find un-

explainable mysteries in the natural world. Sometimes, scientists may be tempted simply to ignore the entire affair.

Niall Shanks points out the dangers of that approach in his cogent and well-argued alarum *God, the Devil, and Darwinism*. According to polls (which are themselves controversial in this area), relatively few people in the United States believe that God played no role in the evolution of human beings from other life forms. Fortunately, many Americans are adept at recognizing a material and a non-material dimension to life, and usually they succeed in keeping the two domains separate. But when individuals are forced to choose, such as through a ballot initiative, science almost invariably suffers.

Shanks, a philosophy professor at East Tennessee State University, deftly skewers the scientific pretensions of intelligent design creationists. He is particularly effective in demolishing the claims of creationist William Dembski, who claims to have discovered a fourth law of thermodynamics that he terms the conservation of information. However, Shanks offers relatively little advice about how to respond to the demand that science educators “teach the controversy.” In fact, by focusing on the more extreme social ambitions of creationists, he sometimes overlooks their less divisive and therefore stronger arguments.

Science educators can benefit greatly by understanding creationists’ motivations and strategies. These are thoroughly described in *Creationism’s Trojan Horse* by Southeastern Louisiana University philosopher Barbara Forrest and Paul R. Gross, former University of Virginia provost and author of *Higher Superstition: The Academic Left and Its Quarrels with Science* (Johns Hopkins University Press, Baltimore, MD, 1994). Advocates of intelligent design have produced no evidence that anything other than naturally occurring mechanisms is responsible for the empirically observed world. But, as is meticulously documented in Forrest and Gross’s book, they have produced a flood of pamphlets, press releases, popular books, Web sites, and other pronouncements—a campaign explicitly called for in a document

Darwinism, Design, and Public Education

John Angus Campbell and Stephen C. Meyer, Eds.

Michigan State University Press, East Lansing, MI, 2004. 672 pp. \$84.95. ISBN 0-87013-670-4. Paper, \$28.95. ISBN 0-87013-675-5.

God, the Devil, and Darwin

A Critique of Intelligent Design Theory by Niall Shanks

Oxford University Press, New York, 2004. 289 pp. \$29.95. ISBN 0-19-516199-8.

Creationism’s Trojan Horse: The Wedge of Intelligent Design

by Barbara Forrest and Paul R. Gross

Oxford University Press, New York, 2004. 411 pp. \$40. ISBN 0-19-515742-7.

The reviewer, a science writer in the Washington, DC, area, is the author of *Evolution in Hawaii: A Supplement to Teaching About Evolution and the Nature of Science*. E-mail: solson@comcast.net

known as “The Wedge Strategy” leaked in 1999 from the Center for Science and Culture. Forrest and Gross write, “It is one of the most remarkable examples in our time of naked public relations management substituting successfully for knowledge and the facts of the case.” (Indeed, the leaders of

the campaign can be expected to claim that even this review demonstrates that intelligent design is being taken seriously by the scientific community.)

Resistance to the teaching of evolution is not going to fade away. On the contrary, creationism appears again to be in a period of

ascendancy. Science educators must try to understand and come to terms with the viewpoints and passions of those who feel threatened by the teaching of evolution in public schools. They also must be well informed to continue to resist the inclusion of religiously motivated ideas in science curricula.

NOTA BENE: SCIENCE AND CULTURE

Pain Viewed Dispassionately

Although it describes something universally experienced, pain is a strange word in English—it almost defies definition and there are few synonyms. The phenomenon is the outcome of a series of sensory, cognitive, and emotional processes, and brain-mapping studies show that pain centers and emotion-processing regions overlap. This is probably why it is so hard to disentangle the components and to objectively analyze pain. Even though each encounter with pain is subjective, the sensation falls on a spectrum of tolerance and is modulated by context. The degree and duration of

Pain

Passion, Compassion, Sensibility

Javier Moscoso, Curator

A Wellcome Trust exhibition at the Science Museum, London. 12 February to 20 June 2004. www.wellcome.ac.uk/pain. Booklet and CD. £2. ISBN 1-84129-050-5.

sensation also depend on whether we are dealing with the distinct physiologies of acute or chronic pain.

That there are boundaries to pain is not immediately clear in the exhibition currently showing at London's Science Museum, *Pain: Passion, Compassion, Sensibility* (curated by Javier Moscoso, a historian of science at the University of Murcia, Spain). But that's not a criticism. The exhibition makes the viewer think hard about the seemingly unthinkable. Visitors encounter a kaleidoscope of objects and images—ranging from instruments of torture and depictions of martyrdom to scenes of childbirth and portraits of amputation—as well as installations constructed to provide insights into the pains of heartbreak, compassion, and sadomasochism.

The Sensibility section of the accompanying CD provides a good place to start exploring the project. This includes a short video by Carlos Belmonte and Stuart Ingham along with essays by John Wood *et al.*, Fernando Cervero, Clifford Woolf, Jonathan Cole, and Bud Craig, which offer concise summaries of what's going on in the brain when pain occurs. Because pain straddles physiological and emotional responses and has always been a conundrum to humans, learning a little of the history of our understanding of it is helpful. That background forms the theme of the exhibition's first segment, “Passion,” and also of several of the essays.

Pain has long been thought of as God's punishment for the original sin of humankind's first parents and is therefore God's gift. The experience of severe pain, perhaps through having all your teeth removed (Saint Appollonia) or your breasts cut off (Saint Agatha), was therefore the route to divine understanding—hence, as Fernando Salmón explains in his essay, martyrdom and sainthood. Part of the biological explanation given for pain-associated ecstatic religious phenomena, and also for paradoxical pleasures associated with pain (discussed in Lesley Hall's essay “Pain and the Erotic”), is the release of endogenous

opiates causing a “high.” For most people, for most of history, pain simply had to be suffered as part of the sinful human condition. This is not to say that narcotics were not prized and fought over as earnestly in the 13th century as at present, but for the most part humans simply resigned themselves to pain. The exhibition offers a stark reminder that, from the earliest invention of the trephine to the perfection of amputation saws, surgical instruments were pretty much identical to torture implements. The development of anesthesia and analgesia in the 19th century meant that the masses could at last escape pain. Victorian intellectuals could then look upon pain and suffering as evidence of the nonexistence of God. In her essay, Lucy Bending argues that the erosion of the influence of the church in Britain stemmed more from thinking about pain than from Darwin's ideas.

The emotional component of pain is covered by several items that at least loosely resemble SciArt (the Wellcome Trust's program for supporting arts projects that are informed by biomedical science). Here we are on firmly subjective territory. In “Compassion,” exhibits describe visceral reactions to the pain of others (1), which sometimes develop to a greater magnitude than in the recipient of the injury. We are also led to understand why people are provoked into self-harm (in attempts to dominate the constancy of chronic pain), and we witness personal accounts of lovesickness and heartbreak. Undoubtedly, the most haunting aspect was the flamenco lamentation from Murcia.

The Wellcome Trust–Science Museum project has made ambitious use of multimedia technology. The accompanying materials and events are excellent and extensive, and anyone interested in the topic can look at least at part of the materials on offer. The inexpensive CD and the Web site both hold a lot of supporting material, including several short essays and reviews on medical, biological, and



Richard Tennant Cooper's watercolor (c. 1912) symbolizes the effects of chloroform upon the human body.

cultural visions of pain. And in conjunction with the exhibition, London's Documentary Filmmakers Group has arranged a series of related films (2).

The juxtaposition of so many disparate objects related to pain is provocative but curiously unshocking—the exhibition has a dignified detachment—and viewers are largely left to work on their own thoughts. Maybe it's not so hard to pull together in our imaginations the impressions left by Anish Kapoor's red slit in the exhibition wall called *The Healing of St. Thomas*, a Chinese torture chair fitted with 12 blades, and a video of an amputation. It is hard to write this down without appearing gratuitously violent or coldly inhuman, but somehow this exhibition is neither.

—CAROLINE ASH

References

1. T. Singer *et al.*, *Science* **303**, 1157 (2004).
2. See www.dfglondon.com/pain/.