Essay Reviews

The Blasphemy of Intelligent Design

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The argument from design to demonstrate God’s existence, now called the ‘Intelligent Design’ argument (ID) is a two-tined argument. The first prong asserts that the universe, humans, as well as all sorts of organisms, in their wholes, in their parts, and in their relations to one another and to their environment, appear to have been designed for serving certain functions and for certain ways of life. The second prong of the argument is that only an omnipotent Creator could account for the perfection and purposeful design of the universe and everything in it. In the thirteenth century, St. Thomas Aquinas formulated in the Summa Theologiae five arguments, or ways, for demonstrating God’s existence by reason. The ‘fifth way’ is an argument from design, based on the designed purposefulness of the universe: ‘We see that things that lack intelligence act for an end, which is not fortuitous but results from design … directed by some being endowed with knowledge and intelligence …. Therefore some intelligent being exists by whom all natural things are directed to their end; and this being we call God.’ Aquinas’s argument was founded on the universe and its parts, all harmoniously fitting together and thus evincing their design.

The argument from design had been already proposed by some Fathers of the Church in the early centuries of the Christian era on the basis of the overall harmony and perfection of the universe. Augustine
(354–430) affirms that ‘The world itself, by the perfect order of its changes and motions and by the great beauty of all things visible, proclaims ... that it has been created, and also that it could not have been made other than by a God ineffable and invisible in greatness, and ... in beauty.’ In his Summa Contra Gentiles, Aquinas attributes the argument from design, or teleological argument, to St. John Damascene (675-749).

Natural theology was disfavored by the Reformation. Martin Luther and John Calvin denied that human nature, corrupted after the Fall, would have the power, without Revelation, to acquire knowledge of God and his attributes.

An elaborate formulation of the argument from design was The Wisdom of God Manifested in the Works of Creation (1691) by John Ray (1627–1705), an English clergyman and naturalist. Ray regarded as incontrovertible evidence of God's wisdom that all components of the universe – the stars and the planets as well as all organisms – are so wisely contrived from the beginning and perfect in their operation. The 'most convincing argument of the Existence of a Deity,' writes Ray, 'is the admirable Art and Wisdom that discovers itself in the Make of the Constitution, the Order and Disposition, the Ends and uses of all the parts and members of this stately fabric of Heaven and Earth.' On the Continent, Voltaire (1694–1778), like other philosophers of the Enlightenment, accepted the argument from design. Voltaire asserted that in the same way as the existence of a watch proves the existence of a watchmaker, the design and purpose evident in nature prove that the universe was created by a Supreme Intelligence.

In his Natural Theology (1802), the English clergyman William Paley (1743–1805) made the strongest possible case for intelligent design, based on extensive and accurate biological knowledge, as extensive and accurate as was available at the time. Paley made well the case that the human eye is as complex a contrivance as a watch or a telescope, with several parts all required to fit precisely for achieving vision. He explored the diversity of organs and limbs in all sorts of organisms, precisely designed to accomplish their function. Paley saw that the relationship between mates of the same species, between animals of different species, and between organisms and their environments appeared to have been precisely designed by an omnipotent Creator.

Paley was intensely committed to the abolition of the slave trade and by the 1780s had become a much sought-after public speaker against slavery. Paley was also an influential writer of works on Christian philosophy, ethics, and theology. The Principles of Moral and Political Philosophy (1785) and A View of the Evidence of Christianity (1794) earned him prestige and well-endowed ecclesiastical benefices, which
allowed him a comfortable life. In 1800, Paley gave up his public-speaking career for reasons of health, providing him ample time to study science, particularly biology, and to write *Natural Theology; or, Evidences of the Existence and Attributes of the Deity* (1802), the book by which he has become best known to posterity and which would greatly influence Darwin. With *Natural Theology*, Paley sought to update John Ray’s *Wisdom of God Manifested in the Works of the Creation*, but Paley could now take advantage of one century of additional biological knowledge. Paley’s keystone claim is that ‘There cannot be design without a designer; contrivance, without a contriver; order, without choice; ... means suitable to an end, and executing their office in accomplishing that end, without the end ever having been contemplated.’

*Natural Theology* is a sustained argument for the existence of God based on the obvious design of humans and their organs, as well as the design of all sorts of organisms, considered by themselves, as well as in their relations to one another and to their environment. The argument has two parts: first, that organisms give evidence of being designed; second, that only an omnipotent God could account for the perfection, multitude, and diversity of the designs.

There are chapters dedicated to the complex design of the human eye; to the human frame, which displays a precise mechanical arrangement of bones, cartilage, and joints; to the circulation of the blood and the disposition of blood vessels; to the comparative anatomy of humans and animals; to the digestive tract, kidneys, urethras, and bladder; to the wings of birds and the fins of fish; and much more. For 352 pages, *Natural Theology* conveys Paley’s expertise: extensive and accurate biological knowledge, as detailed and precise as was available in the year 1802. After detailing the precise organization and exquisite functionality of each biological entity, relationship, or process, Paley draws again and again the same conclusion, that only an omniscient and omnipotent Deity could account for these marvels of mechanical perfection, purpose, and functionality, and for the enormous diversity of inventions that they entail.

Paley’s first model example in *Natural Theology* is the human eye. Early in chapter 3, Paley points out that the eye and the telescope ‘are made upon the same principles; both being adjusted to the laws by which the transmission and refraction of rays of light are regulated.’ Specifically, there is a precise resemblance between the lenses of a telescope and ‘the humors of the eye’ in their figure, their position, and the ability of converging the rays of light at a precise distance from the lens – on the retina in the case of the eye.

Paley makes two remarkable observations, which enhance the com-
plex and precise design of the eye. The first observation is that rays of light should be refracted by a more convex surface when transmitted through water than when passing out of air into the eye. Accordingly, 'the eye of a fish, in that part of it called the crystalline lens, is much rounder than the eye of terrestrial animals. What plainer manifestation of design can there be than this difference? What could a mathematical instrument maker have done more to show his knowledge of [t]his principle ...?'

The second remarkable observation made by Paley that supports his argument is dioptic distortion: 'pencils of light, in passing through glass lenses, are separated into different colors, thereby tinging the object, especially the edges of it, as if it were viewed through a prism. To correct this inconvenience has been long a desideratum in the art. At last it came into the mind of a sagacious optician, to inquire how this matter was managed in the eye, in which there was exactly the same difficulty to contend with as in the telescope. His observation taught him that in the eye the evil was cured by combining lenses composed of different substances, that is, of substances which possessed different refracting powers.' The telescope maker accordingly corrected the dioptic distortion 'by imitating, in glasses made from different materials, the effects of the different humors through which the rays of light pass before they reach the bottom of the eye. Could this be in the eye without purpose, which suggested to the optician the only effectual means of attaining that purpose?'

Paley summarizes his argument by stating the complex functional anatomy of the eye: The eye consists, 'first, of a series of transparent lenses — very different, by the by, even in their substance, from the opaque materials of which the rest of the body is, in general at least, composed.' Second, the eye has the retina, which as Paley points out, is the only membrane in the body that is black, spread out behind the lenses, so as to receive the image formed by pencils of light transmitted through them, and 'placed at the precise geometrical distance at which, and at which alone, a distinct image could be formed, namely, at the concourse of the refracted rays.' Third, he writes, the eye possesses 'a large nerve communicating between this membrane [the retina] and the brain; without which, the action of light upon the membrane, however modified by the organ, would be lost to the purposes of sensation.'

Could the eye have come about without design or preconceived purpose, as a result of chance? Paley had set the argument against chance, in the very first paragraph of Natural Theology (1802, p. 1), reasoning rhetorically by analogy: 'When we come to inspect the watch, we perceive ... that its several parts are framed and put together for a purpose,
e.g. that they are so formed and adjusted as to produce motion, and that motion so regulated as to point out the hour of the day; that if the different parts had been differently shaped from what they are, or placed after any other manner or in any other order than that in which they are placed, either no motion at all would have been carried on in the machine, or none which would have answered the use that is now served by it. The watch’s mechanism is so complicated it could not have arisen by chance.

The strength of the argument against chance derives, Paley tells us, from what he names ‘relation,’ a notion akin to what some contemporary proponents of ID, such as Michael Behe, have named ‘irreducible complexity.’ This is how Paley formulates the argument. ‘When several different parts contribute to one effect, or, which is the same thing, when an effect is produced by the joint action of different instruments, the fitness of such parts or instruments to one another for the purpose of producing, by their united action, the effect, is what I call relation; and wherever this is observed in the works of nature or of man, it appears to me to carry along with it decisive evidence of understanding, intention, art’ (1802, p. 175-176). The outcomes of chance do not exhibit relation among the parts or, as we might say, they do not display organized complexity. He writes that ‘a wen, a wart, a mole, a pimple’ could come about by chance, but never an eye; ‘a clod, a pebble, a liquid drop might be,’ but never a watch or a telescope.

Paley notices the ‘relation’ not only among the component parts of an organ, such as the eye, the kidney, or the bladder, but also among the different parts, limbs and organs that collectively make up an animal and adapt it to its distinctive way of life: ‘In the swan, the web-foot, the spoon bill, the long neck, the thick down, the graminivorous stomach, bear all a relation to one another …. The feet of the mole are made for digging; the neck, nose, eyes, ears, and skin, are peculiarly adapted to an underground life. [In a word,] this is what I call relation.’

Throughout Natural Theology, Paley displays extensive and profound biological knowledge. He discusses the fish’s air bladder, the viper’s fang, the heron’s claw, the camel’s stomach, the woodpecker’s tongue, the elephant’s proboscis, the bat’s wing hook, the spider’s web, insects’ compound eyes and metamorphosis, the glowworm, univalve and bivalve mollusks, seed dispersal, and on and on, with accuracy and as much detail as known to the best biologists of his time. The organized complexity and purposeful function reveal, in each case, an intelligent designer, and the diversity, richness, and pervasiveness of the designs show that only the omnipotent Creator could be this Intelligent Designer.
Paley was not the only proponent of the argument from design in the first half of the nineteenth century. In Britain, a few years after the publication of *Natural Theology*, the eighth Earl of Bridgewater endowed the publication of treatises that would set forth ‘the Power, Wisdom and Goodness of God as manifested in the Creation.’ Eight treatises were published during 1833–1840, several of which artfully incorporate the best science of the time and had considerable influence on the public and among scientists. One of the treatises, *The Hand, Its Mechanisms and Vital Endowments as Evincing Design*, was written by Sir Charles Bell, a distinguished anatmist and surgeon, famous for his neurological discoveries, who became professor of surgery in 1836 at the University of Edinburgh. Bell follows Paley’s manner of argument, examining in considerable detail the wondrously useful design of the human hand, but also the perfection of design of the forelimb used for different purposes in different animals, serving in each case the particular needs and habits of its owner: the human’s arm for handling objects, the dog’s leg for running, and the bird’s wing for flying. ‘Nothing less than the Power, which originally created, is equal to the effecting of those changes on animals, which are to adapt them to their conditions.’

In the 1990s, authors such as Michael Behe, William Dembski, Phillip Johnson, Jonathan Wells, and others, have revived the argument from design. Often, however, these authors sought to hide their real agenda, namely that ID could be taught in the public schools, as an alternative to the theory of evolution, without incurring conflict with the U.S. Constitution, which forbids the endorsement of any religious beliefs in public institutions. They claim that the Intelligent Designer need not be God, but could be a space alien or some other intelligent superpower unknown to us. The folly of this pretense is apparent to anyone who takes the time to consider the issue seriously. It is nothing but a vulgar charade.

*Ccreationism’s Trojan Horse* is an extended, detailed, and incisive exposure and criticism of the policies, strategies, and vacuous arguments of modern intelligent design. Barbara Forrest and Paul R. Gross have chosen as a focus the overarching political strategy of ID proponents known as ‘The Wedge,’ ‘A movement with a plan to undermine public support for the teaching of evolution and other natural science supporting evolution,’ holding, ultimately, ‘huge ambitions for revolutionizing all science and all culture’ (p. 16). As the authors tell the story, the Wedge emerged not as a product of scientists or science educators, but rather ‘in the course of one man’s personal difficulties after a divorce [which] led a middle-aged Berkeley professor of law, Phillip E. Johnson, into born-again Christianity’ (p. 16). In 1991, Johnson pub-
lished a ‘critique’ of evolutionary science in his *Darwin on Trial*, a book that was described in *Scientific American* (July 1992) by the distinguished evolutionist, Stephen J. Gould as ‘full of errors, badly argued, based on false criteria, and abysmally written.’ The Wedge strategy found in 1996 a home, and eventually financial support, in the Center for the Renewal of Science and Culture, under the auspices of the Discovery Institute, a conservative think tank in Seattle, in the state of Washington.

The ambitious five-year (1999-2003) strategy of the Wedge proponents of ID became publicly exposed on the Internet in 1999. With money in hand and fellowships to award, one of the five-year objectives was the publication of ‘one hundred scientific, academic and technical articles by our fellows’. Forrest and Gross persistently, if somewhat painfully, search for evidence of any scientific accomplishments of ID in journals, citation data bases, web sites, the Internet, and all sorts of sources and pronounce their verdict: ‘Nothing of genuine scientific experimental or theoretical significance has been written on intelligent design as a biological theory’ (p. 46, their emphasis). Numerous scientists, including myself, engaged in the debate with ID and other creationists, have similarly asserted over the years the absence of any ID (or creationist) genuine scientific research. We owe it to Forrest and Gross that they have gone through the enormously detailed search for all possible sources of evidence. The scientific community is indebted to them for their painstaking effort.

One creationist claim, much repeated over the years as clinching the case against evolution, is the ‘sudden’ appearance of many animal phyla around the Cambrian period, which started some 542 million years ago, the so-called, by scientists and others, ‘Cambrian explosion’. IDers join creationists of all flavors in using statements from geologists, paleontologists, and other evolutionists that supposedly manifest that evolutionists have found in the Cambrian explosion an event that it is out-and-out incompatible with gradual evolution, as a result of the process of natural selection in response to environmental challenges and depending on the sporadic appearance of suitable mutations. It may first be noted that ‘young-earth creationists’ get little consolation from evolutionists’ assertions, because whatever expressions paleontologists may use to describe the Cambrian and pre-Cambrian origination of phyla, whether ‘sudden’ or ‘abrupt’ or ‘explosion,’ all agree that the events occurred several hundred millions years ago, not compatible with the 10,000 years or so that young-earth creationists attribute to the age of the universe.

The tiresome repetition by creationists that the Cambrian explosion
is incompatible with evolution has been deconstructed again and again, by evolutionists and others. The reason why Forrest and Gross pay it attention is that IDers now claim that the recent discoveries and descriptions by Chinese paleontologists of the Chengjiang phosphate-rock fossils have clinched the case against evolution. Some form of special creation or intelligent design would be required, ‘because as they [IDers] assert, no ancestors of the Cambrian fauna or transitional forms between them exist in the fossil record, and all the basic subsequent forms are already present in the Cambrian’ (p. 53). Of course, none of these claims is correct. Ancestors exist in the Ediacaran fauna preceding the Cambrian, transitional forms are known, and the appearance of different phyla occurred over millions of years. Molecular phylogenetic studies, hundreds of them, have unraveled the successive evolution of different phyla and the evolutionary relationships among them. Moreover, the dramatic discoveries, over the last two decades, of control circuits and switch genes in investigations of the evolution of development (the rapidly expanding subdiscipline that has come to be known as ‘evo-devo’) have shown unanticipated genetic similarity between the most diverse kinds of organisms. There are high-level control genes (such as the homeobox or box genes) that act on sets of genes, rather than on individual genes. What is surprising is, for example, how similar the box genes are that control the development of the ‘body plan,’ that is, the differentiation of parts (head, thorax, abdomen, legs, etc.), among mammals, insects, sea-urchins, and other complex organisms. The sets of genes of the homeoboxes have retained over hundreds of millions of years much similarity in their DNA sequence and even the linear order in which the different box genes are arranged in the genome. There can be little doubt that the box genes of animals from different phyla have evolved from common ancestors. Forrest and Gross expose, in their typically detailed and thorough manner, the failure of ID proponents seeking to associate themselves with the Chengjiang fossil discoveries, or with the Chinese discoverers.

Some 20 pages of Creationism's Trojan Horse are dedicated to Michael Behe, the biochemist who has become one of the most visible and most ardent proponents of ID, particularly with his Darwin's Black Box (1996), but also through public appearances and popular articles. Behe belabors several instances of molecular biological mechanisms that are ‘irreducibly complex’. An irreducibly complex system is defined by Behe as an entity ‘composed of several well-matched, interacting parts that contribute to the basic function, wherein the removal of any one of the parts causes the system to effectively cease functioning.’ ID proponents have argued that irreducibly complex systems cannot be the out-
come of evolution. According to Behe, ‘An irreducibly complex system cannot be produced directly ... by slight, successive modifications of a precursor system, because any precursor to an irreducible complex system that is missing a part is by definition nonfunctional .... Since natural selection can only choose systems that are already working, then if a biological system cannot be produced gradually it would have to arise as an integrated unit, in one fell swoop, for natural selection to have anything to act on.’ Behe’s self-proclaimed ‘discovery’ of irreducible complexity is, of course, nothing else than Paley’s two-centuries old concept of ‘relation’.

One of Behe’s favorite examples of alleged irreducible complexity is the bacterial flagellum. The bacterial flagellum is, according to Behe, irreducibly complex because it consists of several parts so that, if any part is missing, the flagellum will not function. It could not, therefore, says Behe, have evolved gradually, one part at a time, because the function belongs to the whole; the separate parts cannot function by themselves. ‘Because the bacterial flagellum is necessarily composed of at least three parts – a paddle, a rotor, and a motor – it is irreducibly complex.’ Behe’s argument that the different components of the flagellum must have come about ‘in one fell swoop’, because the parts cannot function separately and thus could not have evolved independently, is reminiscent of Paley’s argument about the eye. Of what possible use would be the iris, cornea, lens, retina, and optic nerve, one without the others?

The first observation to make is that the bacterial flagellum does not exist. In different species of bacteria, there are different kinds of flagella, some simpler than the one described by Behe, others just different, even very different, as in the archaea, a very large group of bacteria-like organisms. Moreover, motility in many bacteria is accomplished without flagella at all. Further, biochemists have shown that some flagellum components may have evolved from secretory systems, which are very similar to the flagellum, but lack some of the flagellum’s components. A major component of the flagellum described by Behe has essentially the same structure as type-III secretory systems (TTSS), although these lack the motor proteins.

There are many kinds of disease-causing bacteria (although not all bacteria, or even a majority, are agents of human disease). One way in which bacteria cause disease is by injecting toxins (poisons) into the cells of the host organism, which they accomplish by means of special protein secretory systems, one of which is TTSS. It turns out that the TTSS proteins and portions of the bacterial flagellum are homologous, that is, are very similar and have a common evolutionary origin. The
bacterial flagellum is not irreducibly complex: A subset of the flagellum’s complement of proteins evolved as a mechanism for bacteria to inject proteins across a cell’s membrane.

Forrest and Gross expose the fallacy of Behe’s claims and cite publications by Kenneth Miller, David Ussery, Ian Musgrave and other scientists demolishing Behe’s supposed evidence for intelligent design. Moreover, the evolutionary scenario of the bacterial flagella has now been reconstructed. Particularly significant are two papers that have appeared after the publication of Creationism’s Trojan Horse: by M.J. Pallen and N.J. Matzke (Nature Reviews Microbiology, 4:784-790, 2006), and by R. Liu and H. Ochman (Proceedings of the National Academy of Sciences USA, 104:7116-7121, 2007). The components of the flagellum are encoded by gene clusters that may include, in some species, upwards of 50 genes. Liu and Ochman have identified all the flagellar proteins in 41 species from 11 quite diverse groups of bacteria. Twenty-four of the genes encoding the flagellar proteins were already present in the remote common ancestor of all the bacterial species studied. The other genes have come about by duplication and evolution of preexisting genes. Moreover, many of the core of 24 ancestral genes are also derived from a few preexisting ones by successive gene duplications that gradually increased their number.

Other extravagant claims of Behe refer to the blood clotting mechanism and to the immune system in mammals and other vertebrates. Astonishingly, Behe has written that ‘There is no publication in the scientific literature – in prestigious journals, specialty journals, or books – that describes how molecular evolution of any real, complex, biochemical system either did occur or even might have occurred’ and, in particular, ‘the scientific literature has no answers to the origin of the immune system’. The vacuity of this claim was clearly stated by Federal Judge John E. Jones III in his December 2005 decision, Kitzmiller v. Dover Area School District, which culminated a several-weeks-long trial in Pennsylvania concerning the teaching of intelligent design in the public schools. Judge Jones was appointed to the Federal District Court of Central Pennsylvania by President George W. Bush and is, reportedly, an observant Christian. These credentials make it unlikely that he would be considered a ‘liberal’ judge or be otherwise prejudiced against Christianity. In Dover, Judge Jones points out with understated disbelief that ‘Professor Behe was questioned concerning his 1996 claim that science would never find an evolutionary explanation for the immune system. He was presented with fifty-eight peer-reviewed publications, nine books, and several immunology textbook chapters about the evolution of the immune system; however, he simply insisted that this was still not
sufficient evidence of evolution, and that it was not “good enough”.
Judge Jones concludes: ‘We therefore find that Professor Behe’s claim for
irreducible complexity has been refuted in peer-reviewed research
papers and has been rejected by the scientific community at large.’ The
argument for the irreducible complexity of the flagellum, blood clotting
and the immune system is formulated, like other ID arguments, as an
‘argument from ignorance’. Because one author (Behe, in this case) does
not know how a complex feature may have come about, it must be the
case that it is irreducibly complex. This argument from ignorance dis-
solves as scientific knowledge advances, or when preexisting scientific
knowledge is taken into account.

A pitiful example of misrepresentation and outright distortion of sci-
entific knowledge by IDers is Jonathan Wells, Icons of Evolution: Science
or Myth? (2000). This is how Forrest and Gross introduce the subject:
‘In a sermon expressing appreciation for the encouragement and sup-
port of ‘Father’, the Reverend Moon, Unification Church theologian
Jonathan Wells explains his early conviction that ‘I should devote my
life to destroying Darwinism.’ This is the reason for his pursuit of a
Ph.D. in biology at Berkeley following his advanced theological studies.
Wells offers readers of the sermon a short but complete statement of
purportedly scientific reasons for concluding that the standard biologi-
cal account of life’s history on Earth and of the mechanisms of animal
development is false and deceptive … It is a remarkable document,
more so even than Well’s book, Icons of Evolution, whose purpose is to
convince the public that science education today, especially in biology,
indoctrinates children in a dishonest materialist myth: Darwinism’ (p.
88–9). Forrest and Gross dedicate 24 pages to the rebuttal of Icons and
other of Wells’ delusions misconstruing well-known research on
Darwin’s finches, peppered moths, human evolution, and much more.
A problem, as Forrest and Gross point out, is ‘that it takes as long (and
as much space) to rebut them, and to document the rebuttals from pri-
mary sources, as it must have taken Wells to write his book. Moreover,
to make an intellectually honest rebuttal in a short speech … is a hope-
less undertaking. The only chance is to use rhetorical tricks, just as the
ID promoters and other creationists do. But that is not work that seri-
ous scientists are likely to take up’ (p. 110). When I myself read Icons, I
kept wondering whether Wells’ understanding of evolution was hope-
lessly incompetent or if he was dishonest. ‘Both’, I sadly concluded.

About half of Creationism’s Trojan Horse is a detailed exposé of the
tactical and strategic maneuvers of ID proponents towards eliminating
the teaching of evolution in the schools and convincing the public at
large that evolution is false or that, at the very least, scientists have seri-
ous misgivings about its validity. The ID arguments have no scientific cogency and, not surprisingly, have utterly failed to impress the majority of the world scientists. But, as Forrest and Gross state it, ‘the Wedge strategy does not require that scientists be impressed. It does depend critically, however, on convincing the public that mainstream science is impressed by ID ... What the Wedge public relations campaign and the writings of its executors must accomplish is to convince the general public, including especially the political powers, that ID is a body of solid scientific research, sufficiently large and growing, with enough qualified practitioners and adherents to qualify as a credible and intellectually significant alternative to Darwinism’ (p. 86).

Creationism’s Trojan Horse is an effective deconstruction of the intelligent design movement, the Wedge strategy, and other creationist abominations. This thoroughly-researched and thoroughly-documented extraordinary book deserves the attention and gratitude of educators and scientists, as well as of people of faith who do not want to be misled into the aberration that science, and evolution in particular, contradicts their religious beliefs.

Much to the harm of scientific education in the schools, the Wedge strategy seems to be successful, or is at least successful enough to jeopardize education in some schools and to be accepted by large segments of the public. (I am thinking primarily of the United States.) Scientists and educators must increase their efforts in favor of science education. But I suggest that there is an additional strategy to follow, namely to point out that ID is incompatible with belief in a personal God, who is omnipotent and benevolent. As I have written elsewhere (see my Darwin’s Gift to Science and Religion, Joseph Henry Press, 2007; but also History and Philosophy of the Life Sciences, 28-1[2006]:71-82), imperfections and defects pervade the living world. Consider the human eye. The visual nerve fibers in the eye converge to form the optic nerve, which crosses the retina (in order to reach the brain) and thus creates a blind spot, a minor imperfection, but an imperfection of design, nevertheless; squids and octopuses do not have this defect. Defective design would seem incompatible with an omnipotent and omniscient intelligent designer.

Organisms and their parts are typically less than perfect; moreover, deficiencies and dysfunctions are pervasive, evidencing ‘incompetent’ rather than ‘intelligent’ design. We humans have too many teeth for the size of our jaw, so that wisdom teeth need to be removed and the other teeth are often crooked for lack of room. A human engineer would have been fired for such incompetent design. The birth canal in women is much too narrow for easy passage of the infant’s head, so that yearly
more than 350,000 babies die during delivery throughout the world. Surely we don’t want to blame God for this dysfunctional design or for the children’s deaths. The world of organisms also abounds in ‘cruelties’, an apposite qualifier if the cruel behaviors were designed outcomes of a being holding onto human or higher standards of morality. Think of predators tearing apart their prey or parasites destroying the functional organs of their hosts.

Consider what may be the greatest insult of ID to the Creator. About 20 percent of all human pregnancies end in spontaneous abortion during the first two months, owing to the deficiencies of the human reproductive system. ID implicitly attributes this calamity to the Creator’s faulty design, rather than to the clumsy ways of the evolutionary process. This conclusion is warranted: Intelligent Design is blasphemy.\textsuperscript{*}

\textsuperscript{*}Parts of this Essay Review are excerpted, with modifications, from chapters 1, 2, and 8 of my \textit{Darwin’s Gift to Science and Religion}, Washington, DC: Joseph Henry Press, 2007, xi + 237 pp.