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Intelligent Design and Evolution: Some Clarifications

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The issues surrounding the debate over “intelligent design” (ID) theory are complex and have many ramifications. In part these are debates about the validity of certain aspects of Darwin’s theory of evolution as it is currently manifest in “consensus” evolutionary theory—the theory found in most textbooks, college curricula, and the scientific journals dealing with evolutionary biology. This debate is complicated by the popular debates that surround evolutionary theory in the United States. These public debates are imbedded in the constitutional and religious history of the US, and they illustrate a larger crisis over values. Other scientific theories could be involved in these social and cultural controversies, but for historic reasons Darwinian evolution has become the central point of debate in the United States. In India, for example, there is little controversy over evolution, but there is a conflict at present over the teaching of western scientific astronomy in the schools that is opposed by traditional Hindus who want Indian astrology taught as an alternative. This has generated public controversies within the educational system that bear surprising similarities to those generated by the evolution-creation debates in the United States.

A recent Op-Ed piece by Austrian Cardinal Christoph Schönborn headlined as “The Official Catholic Stance on Evolution,” and the front-page news article of July 9 in the NYT headed “Leading Cardinal Redefines Church’s View on Evolution,”[1] seemed to ally Catholic thought with ID positions. Although the Cardinal has since clarified his comments, and denied that he was either supporting American-style intelligent design theory or attacking Darwin’s intellectual achievement,[2] his statements indicate the need to clarify some issues surrounding the issue of intelligent design and evolutionary theory.

1. What is “Intelligent Design?”

One difficulty in sorting out the issues involves the varying definitions of ID theory encountered in the literature. To many of its critics, it is just a reworking of discredited “creation science,” implying that it is an effort to introduce illegitimately into natural science premises drawn from revelation or a fairly literal reading of the Genesis creation account.[3] The main advocates of ID theory deny this identity. In some statements by its advocates, ID theory is a claim about inferences possible from the existence of “irreducible complexity” in biological systems. This allows inference to intentional causation.[5] The conclusion of intelligent design flows naturally from the data [of biology] itself—not from sacred books or sectarian beliefs. Inferring that biochemical systems were designed by an intelligent agent is a humdrum process that requires no new principles of logic or science. It comes simply from the hard work that biochemistry has done over the past forty years, combined with consideration of the way in which we reach conclusions of design every day.[4]

Other proponents of ID rely less on anatomical or biochemical detail, and appeal instead to information theory, arguing that an explanation is required for the origin of the “complex specified information” contained in biological systems. This allows inference to intentional causation.[5]

The debate over these issues within analytic philosophy of science and philosophy of religion forms a literature of some extent, and it cannot be dealt with here.[6] My own approach will be to offer a few historical remarks that are intended to situate some of the larger issues being contended. An unfortunate feature of much of the current discussion of ID theory and the “evolution-creation” debate is that it is taking place in a historical vacuum. I will argue in the following that when viewed in light of this history, some of the issues surrounding the ID controversy take on a new perspective.
“Intelligent design” theory, in either its simpler or more sophisticated versions, is a particular form of “natural theology”—the claim that human reason can discover some evidence for a designing intelligence in the empirical evidence given in nature. Specifically it involves a commitment to some version of natural theology that has been known in the tradition as “physico-theology.”

This form of natural theology reaches back to the seventeenth century and beyond this, to Antiquity. Since the seventeenth century, and particularly within the English-speaking world, the understanding of natural theology has been entangled with a concept of divine creation that interprets creation as intimately associated with the establishment of the empirically-given order of the world—that is, the interpretation of God’s action in creation does not focus on the granting of existence to things, but on the action of an intelligent creator who is the source of the scientifically discovered structure of nature.

We find an important source of this tradition in the work of the seventeenth-century English natural historian John Ray, whose *The Wisdom of God Manifested in the Works of Creation* (first edition 1691) formed an immensely popular work that generated a succession of similar works by Robert Boyle, William Derham, Carolus Linnaeus, William Paley, and the famous Bridgewater Treatises of Darwin’s era. In Ray’s work, proofs for the existence of God and the intelligent ordering of the world were revealed by the discoveries of the new science, and in particular by the anatomy of plants and animals, the instinctual behavior of social insects, and other seemingly marvelous wonders of the biological world. Ray’s conception of natural theology created a tradition of argument from scientific research to an intelligent orderer of nature to which more sophisticated contemporary arguments by the intelligent design movement bear considerable similarity. It is this also this version of natural theology that formed the foil against which Darwin’s arguments in the *Origin* were formulated. It was Darwin’s claim that the various adaptations and contrivances of organisms were better explained by the workings of selection upon slight variations in structure and function over long expanses of time, rather than by assuming “each species [as] having been independently created.”[7]

As we trace back the origins of the physico-theological line of argument, it is significant to note that its origins are not Biblical nor do they derive from revealed religion, nor are they necessarily tied to the longer tradition of natural theology as this was developed within Scholastic tradition by such individuals as Thomas Aquinas. The roots are Platonic, especially as developed in the creation myth of the dialogue *Timaeus*, and they were subsequently developed in the natural philosophy of neo-Platonism and Greek and Roman Stoicism. As a specifically scientific argument relevant to later biological uses of physico-theology, an important classical source is to be found in the writings of the Hellenistic physician Claudius Galenus (Galen), who drew from arguments found in Neo-Platonism and Stoicism, and applied these in detail to issues of anatomy. Consider the following quotation from Galen’s most extended anatomical work, *On the Usefulness of the Parts*, an influential text on the anatomy of the body This work utilized anatomy to refute the claims of contemporary atomists (e.g. the school of Epicurus) who were claiming that the close fitting of form and function in the body could have arisen by chance collisions of atoms. Commenting on the favorite example of later British natural theologians, the eye, Galen writes:

> Nature. . . would first search out and foresee what was the better thing and then construct it with the utmost skill. She realized that since a thick, hard covering would hinder the eyes in performing their own proper work and a soft, thin one would be altogether liable to injury, it would be better to form one that was hard, but exceedingly thin it were also to be made clear. . . .

Indeed, most people do not set forth the skill of Nature, for if they did, they would wholly admire here, nor do they have the sense not to censure her even if they do not admire her. But it would be only fair for them either to point out some better construction than the one actually existing, or, if unable to do this, to admire what actually exists. O thou reviler of Nature, show us any other of the seven circles at the iris that would be better suited to give rise to the hornlike tunic [cornea], or, if you cannot do so and if you think that it was not good for it to grow off from the hardest circle of all, then point out what better you would have done about the production of this tunic. [8]
The core of Galen's similar analysis of a wide array of anatomical parts could easily be transported, with simply the substitution of a creator "God" for a designing "Nature," into the work of John Ray and the tradition of physico-theologians who followed him.[9] This was the form of natural theology that was attacked by David Hume in the *Dialogues on Natural Religion*, and it was the form of natural theology known to Darwin. It is against the claims of this tradition that much of the polemic of the *Origin of Species* is directed.

The difference between this kind of Platonic-Stoic-Galenic “intelligent design” argument, and Christian creationism needs careful analysis that space will not allow here except in summary. For physico-theology, the essential proof of some kind of theistic cause lies in the discovery of empirical order in the world. For Judeo-Christian creationism, the fundamental issue concerns the *contingency* of existence itself in *any order whatever*.[10]

The adherents of ID theory are therefore quite correct when they claim that they are not necessarily arguing for classical Biblical creationism, revealed religion, or monotheism. As the quote from Galen should make clear, one need only claim that empirical observation displays the existence of some kind of teleological cause that acts for ends, and this cause need have no personal or humanly-intelligent attributes associated with it. Such a theory would also be consistent with the thesis of an eternal, rather than a created world order, and it could in this form be seen consistent with Aristotle’s natural philosophy as one might derive this from such texts as Physics I.8 and Metaphysics XII.7. It is therefore incorrect to interpret the ID-neo-Darwinism debate as simply an “evolution-creation” debate in new dress (or in a “cheap tuxedo” as some critics have quipped).

The issues presented by physico-theology are fundamentally unchanged if we wish to reformulate the traditional arguments to be found in Galen, Ray, Bell and others by more sophisticated “intelligent design” arguments that draw upon the details of biochemical mechanisms, DNA replication, and remarkably complex microstructures of the cell, rather than on features of gross anatomy. The opponents of these arguments can always appeal to great lengths of time, the workings of chance processes, and plausible thought experiments to explain the same phenomena by Darwinian natural selection. Neither side seems able to declare victory in this classic dispute, although scientific consensus is heavily against the ID positions. Why is this the case?

2. *Chance, Design and Evolutionary Theory*

The more specific issue in the debate over ID theory concerns the use of the language of “blind chance” and the denial of teleological concepts in the mainstream neo-selectionist understanding natural selection. The common claim of biologists is that evolution is without purpose, and that its underlying workings are based on chance processes. Some comments on the origins of this claim are of relevance.

Although it is true that some notions of “opportunism” and non-directionalism have been a feature of the Darwinian theory from the 1860s, and they emerged to greater prominence in the later editions of the *Origin*,[11] Darwin, rarely spoke of “chance” with reference to the processes of evolution, preferring the language of “unknown” but presumably deterministic laws behind natural selection. The emphasis on the notion of chance in the sense of statistical randomness has been a post-Darwinian development associated with the theoretical developments of the 1920s and 30s. These developments resulted in a synthesis of two competing traditions in post-Darwin biology. One was the “gradualist” interpretation of evolutionary change developed with mathematic sophistication by the biometrical interpretations of Karl Pearson and his followers.[12] The biometrical school argued for slow and gradual changes overtime in keeping with Darwin’s original theory, with natural selection working directly on slight changes in the variations in the phenotype to create new species. In opposition was the new Mendelian genetics, whose advocates, such as William Bateson and Hugo DeVries, argued for discontinuity and evolution by “saltations.”[13] The reconciliation of this dispute through theoretical population genetics created the neo-synthetic theory of evolution.
At the basis of this resolution was the mathematical interpretation of natural selection, particularly through the work of Ronald A. Fisher. Drawing upon the theorems of Ludwig Boltzmann’s statistical mechanics, which he had studied at Cambridge before turning to the analysis of natural selection theory, Fisher grounded his “fundamental theorem of natural selection” on idealizing assumptions of chance and random statistical processes, assumptions that were based on analogies drawn from thermodynamics.[14] This was based on the notion of statistical individuals in populations composed of genes that behaved like molecules in a gas. Such assumptions entailed randomized mating and assortment, with natural selection as a force that worked to change the frequencies of genes in populations.

These assumptions, developed in further detail by Sewall Wright, Theodosius Dobzhansky and J. B.S. Haldane, along with others, formed the foundations of what has become the accepted neo-selectionist Darwinian theory. With many detailed changes that I will not attempt to summarize, it can be claimed that this theory still constitutes the primary theoretical framework for the discussions of evolutionary biology in most scientific journals and evolutionary literature at present. These framework assumptions underlie the theoretical emphasis on chance and contingency in the working of natural selection.

As a consequence, the frequent emphasis of popularizers of Darwinian evolution on the “purposeless” character of natural selection is more than an unwarranted rhetorical flourish. Such claims represent the extension of these theoretical assumptions of population dynamics to constitute a set of realistic metaphysical claims about the world: nature “really is” governed by the statistically randomized processes postulated in theoretical population dynamics; teleological purpose is “decisively destroyed” by neo-selectionist evolutionary theory, and so on. As put forth in works by Oxford zoologist Richard Dawkins and the philosopher Daniel Dennett, the chance-like character of natural selection theory is generalized into a totalizing metaphysic that claims to undermine theism.[15] The reaction from those who find such a metaphysic objectionable for a variety of reasons is predictable. ID theory can be seen as a direct response to these ambitious claims. The result is a replay in modern dress of the ancient debate over the adequacy of atomism as a comprehensive natural philosophy, with biology once again the main battle ground.

A less contentious reason to reject ID theory does not necessarily stem from hostility to the possibility of theistic interpretations of evolution, or even to the possibility of natural theology. It involves instead a boundary issue defining natural science. Science, it can be argued, is based on “methodological” naturalism—the claim that as a methodological commitment of science, only natural causes and processes are to be incorporated into scientific discourse.[16] By claiming this is “methodological,” no further commitment is necessarily entailed concerning the truth value or completeness of scientific accounts. That is, one is not necessarily claiming that no other explanation could be given, or even that an alternative view—for example, the claim that the world is governed by a benevolent creator—is unfounded. It is only a claim about the form of explanations offered by the sciences.

Although the critics of ID theory often argue that ID theory violates the canon of methodological naturalism by introducing illegitimate, and even supernatural, causes into science, this criticism is less forceful that ID critics seem to believe. The argument of ID theorists in their most sophisticated version is that they are not introducing extraneous or supernatural causes into science. They can, for this reason, claim to be working within the framework of methodological naturalism. It is then the claim of ID theory that some of the causes found by science seem, from empirical evidence itself, to be acting for ends that bear analogy to human intentions, and that this must be admitted on empirical grounds as a datum to be considered by science.

If such claims are admitted as falling within the scope of methodological naturalism, the question really is not between evolution and creation, where the ID debates seem to be located in many minds. It instead concerns consensus formation in science. As a communal activity, science depends on the development of focused research on restricted problems that are formulated against accepted background assumptions and peer-assessed definitions of relevance. At any given time in history, the scientific community will often dogmatically exclude certain topics from discussion in order to focus attention on others.[17] The positions associated with the genetical theory of natural selection in the middle decades of the twentieth century resolved some of the standing problems in natural selection theory and provided a means of focusing
research into evolutionary mechanisms, classification, population genetics, and group relationships. Many issues, such as embryological development, were ignored at this time, only to return in recent decades as evolutionary developmental mechanics. This began by presenting itself as a challenge to the reigning neo-synthetic orthodoxy.[18] Complex systems dynamics has also claimed to provide a new way of dealing with evolutionary questions.[19] Although these positions are taken seriously by groups of scientists and philosophers of biology, it might be claimed that these have still not achieved the status of serious competitors to neo-selectionist theory.

Whatever the philosophical merits of ID theory in the abstract, it lies outside the current consensus evolutionary theory, not because its claims have been refuted in some decisive way, but because it displays little immediate promise of scientific fertility when compared to its neoselectionist rivals. For this reason, its exclusion from the teaching of science seems warranted for the reasons stated. This is not, however, to decide the issue in some larger philosophical sense.

Notes

[6] In addition to the Pennock anthology, which is primarily developing intended to develop arguments hostile to ID, see also the more balanced discussions in W. Dembski and Michael Ruse (eds) Debating Design (Cambridge: Cambridge U Press, 2004).


