

SCIENCE AND RELIGION: THE AMERICAN DEBATE  
STILL A 19TH CENTURY DISCUSSION

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### ABSTRACT

The recent controversy over Intelligent Design in science education is not a new one. Over the many years since the Scopes trial, the debate has been of the same form, a misplaced emphasize on certainty over probability. Religious dogma is mandated certainty and science is mandated quite the opposite. The focus is on how science, philosophy, and religion have been used by the state for political purposes to satisfy very vocal constituencies. In the United States the current introduction of Intelligent Design, as a euphemism for Creationism, is a repackaging of a particular 20<sup>th</sup> Century Fundamentalist Religious argument against the theories of evolution as the result of scientific inquiry and method. The religious fundamentalists have used their misconception of science to defend a particular belief system which historically has condemned its use in any other context. This contradiction exhibits their distain not only for particular sciences but also for all science and its methodology. All members from the scientific and educational community benefit from embracing conflict and seeing this as a growth process rather than as simplistically binary.

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The precepts of Intelligent Design (ID), traditionally referred to as “the *theory* of creationism”, are firmly based within the observation of system complexity and its overwhelming degree of favorable probability as the core of evidence in support of the *theory*. The difficulties, and there are many as will be brought forth in this paper, begins with the very use of the word *theory* as opposed to *scientific theory*. In the latter, conclusions are based upon premises, traditionally and historically subjected to recurring criticism, review, and revision. This process culminates in the progression or evolution of ideas that constitute a conclusion or set of conclusions that will be subjected to the rigor of universal scientific verification and most importantly, falsification. Since the time of the Pre-Socratics, this *scientific evolution* is most prevalent and is taken as second nature to almost all scientists and philosophers. Certainly, the Galilean-Newtonian premises of classical mechanics are based upon the fundamental invariants of length, mass, and time; however, when extended by relaxing these invariant assumptions, yields a modern picture of the universe wherein completely different conclusions are derived. Not surprisingly, these conclusions do not sacrifice the familiar classical results but rather carry them along as special cases under certain initial conditions (Werner Heisenberg 1958, 110-127).

This is such a potent aspect of the scientific method that whenever new or altered premises arise yielding, revised, and often, new conclusions these too are immediately subjected to criticism, alternation, and even contradiction. One need only consider the de Broglie hypothesis of the wave-particle duality of matter yielding the complete “overhaul” of classical mechanics thus establishing the beginnings of quantum mechanics ultimately yielding conclusions minimally consistent with classical results (P. A. M. Dirac 1958, 120). This is by no means uncommon in the scientific arena wherein these criticisms and revisions are not only freely accepted but also are expected. It is no accident that the survivability of any new conclusions derived from modified premises is based largely on a measure of experimental verifications. So much was this the case that from the 1930’s the *logical positivists* posed empirical verifiability as a necessary standard for the conclusions to be ranked meaningfully scientific. In contrast, even outside of the *Vienna Circle*, Popper’s perspective allowing for “myth” as a pseudo-science to become science only by the strict criteria of *falsifiability by observation* to be the measure of scientific character. Thus, the test of any premise or hypothesis is to demonstrate a refutation of those conclusions deductively derived (Paul Edwards 1967, 398-399).

The measure of falsifiable premises is by no means a sufficient condition to establish a science or a scientific theory. Certainly one need only consider the determination of a non-zero “cosmologic constant” establishing an expanding universe. Here, Einstein would overtly state his “greatest blunder” whereupon a vanishing constant would precipitate a static universe. One neither proves nor disproves this in the realm of astrophysical theory by falsifying a premise but rather expands the conclusion to include many possibilities. Richard Feynman, and many of his contemporaries did not and do not necessarily hold that falsifiability is even a necessity condition, particularly in the realm of particle physics (Leonard Susskind 2006, 192). It is, however, a very important

consideration in the realm of those holding to Intelligent Design as a scientific theory. More accurately, when ID becomes the framework of an emergent Anthropic Principle wherein the precepts are precisely those mandating a certain set of necessary conditions precisely “designed” for human existence, it then becomes an *uncontestable*.

Modern science, over the past century, has had much success in extending its domain to include the vast number of possibilities in many particle systems. Once the atomic theory of matter was exhibited as a reality, the probability of large numbers also became so. It is within the scope of this “kind of certainty” as measured by the most probable outcome wherein some of the controversy resides. It is agreed that, even within the modern scientific community, the familiar *Popperian* touchstone of falsifiability does not rest uncontested. The modern perspective that falsifiability is a necessity for any scientific theory is not universally agreed upon in all scientific disciplines. For instance in cosmology, the idea of establishing a “falsifiable” experiment might be considered *difficult* at most. The evidence; however, does possess a falsifiable claim as regards to the support of the many theories proposed. This serves as an illustration of what may qualify as science and what does not. Although there does exist a sentiment among many scientists particularly in the areas of cosmology, particle physics, and string theory that the overwhelming accuracy and certainty of some physical constants, viz., the cosmologic constant, can only be attributed in a context that might support the Anthropic Principle (Leonard Susskind , 81,172). This debate may be reduced, to the contrary, that within the range of the vast amount of time and nearly infinite possibilities, these constancies may themselves be inevitable. Clearly, without design, a primate pounding on a piano for over 4.5 billion years, with the preselected “wrong” notes factored, will compose the complete works of Mozart, rendering those wrong notes extinct. Of course, the objection is who or what pre-determines the wrong notes and by what rules whether it be a

*natural selection, an accident, a punctuated equilibrium*, or not are the just a few conjectures subject to criticism and revision. When one poses uncontested that it might also be *an intelligent selection*, therein lays the difficulty of establishing the statement on scientific grounds whether falsifiable or not. Certainly, this standard would allow for an *intelligent prankster* creating a human with only one heart and two lungs. Once viewed this way, it is by no means a surprise as to the emergent controversy as to whether ID be taught together with science, under the same verifiability and falsifiability standards.

In the public schools of the United States the debate about evolution and creationism has been going on long since the well-known Scopes trial. Certainly, the legal history of this struggle is quite extensive and probably familiar to most. It is needless so say, that in this debate the Establishment Clause of the First Amendment of the Constitution has been consistently upheld. Popular culture, in the United States, has had many misconceptions about what this means. The courts have never ruled nor has constitutional law prohibited the teaching of religion in the public schools but has only banned proselytizing religious belief through preaching. So the only question of teaching creationism or “Intelligent Design”, is in what discipline should it be taught, if at all.

Looking at the possibilities, in the context of the above discussion, if placed in a K-12 physical or biological science class an uncontestable supernatural (meaning only *outside of nature*) explanation of the universe would be a necessary consequence, obviating learning the rigors of the scientific method. Trying to place ID as a non-falsifiable conjecture in an area replete with such concerns is tantamount to equilibrating ID to a science, the very basics of which has opposition and verifiability at its core. This, of course, renders the course conflicted in scope and purpose and cannot serve either concern suitably or responsibly. Other academic disciplines, other than religious studies and/or the philosophy of religion (usually outside of the K-12 environment),

themselves may have the same concerns. So to the question of where ID should be placed, becomes the source of major concern.

This concern is by no means a recent one since the idea of intelligent design goes back to Aristotle and, in its current form, is a restatement of Aquinas' Fifth Way from his *Summa*. In this time, the essential feature is the idea that the appearance of an order establishes the order, thus requiring an "*Orderer*". If we stipulate that this is true in a science class then the ordering is not questioned nor is it challenged. Care is always taken in science to avoid the misconceptions and misrepresentations of the many *hasty generalizations, false cause* arguments and the many other fallacies this entails. We certainly place an artificial order to numerical coincidences such as assigning *lucky numbers* to a sequence of events, but it fails when asked to assign lucky *colors* to the same sequence of events. Many lottery players will not select a sequential numbering of numbers on a ticket with the false impression that the probability lies well outside the realm of possibility. When one considers the same sequence of just selecting colors rather than numbers, the ordering disappears and the probability argument vanishes. This immediately suggests that it is rather astute to select the numbers, say 1,2,3,4,5,6 with the assurance that on one else will, thus guaranteeing a sole winning ticket.

It is certainly understandable that the overwhelming evidence of the high degree of certainty of some physical constants does itself admit the suggestion of purpose and design. To ask a physicist to change just one constant by a small amount, would the resulting universe be as it is? Also, the overwhelming degree of complexity of living and non-living systems does, in itself, generate such questions at even a more basic level. The question of an *Intelligent Designer* leaves many other questions as well. But to question is to allow a refutation and the possibility of suggesting no *designer* at all may not be the desired result but to science, as is its mandate, it would have to be a necessity.

## WORKS CITED

- Leonard Susskind. 2006. *The Cosmic Landscape: String Theory and the Illusion of Intelligent Design*. New York~Boston: Little, Brown and Company.
- Paul Edwards, Editor in Chief, ed. 1967. *The Encyclopedia of Philosophy*. Vol. 5 and 6, New York: Macmillan Publishing Co., Inc. & The Free Press.
- Werner Heisenberg. 1958. *Physics and Philosophy, The Revolution of Modern Science*. New York: Harper & Row.
- P.A.M. Dirac. 1958. *The Principles of Quantum Mechanics*. Oxford: Oxford University Press.