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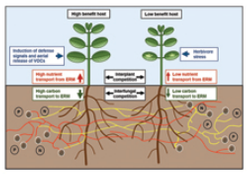

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OPINION ARTICLE

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Creationism and intelligent design are incompatible with scientific progress: A response to Shanta and Vêdanta

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ABSTRACT

In a recent opinion paper, B.K. Shanta claims science leaves no room for the subjective aspect of consciousness, and in doing so, attacks both origin of life and evolutionary research. He claims Vêdanta, one of the 6 orthodox schools of Hindu philosophy, offers an explanation: "the origin of everything material and nonmaterial is sentient and absolute." Here I discuss how the pseudoscience of these creationist views, which are aligned with Intelligent Design, are incompatible with scientific progress and should not be published in scientific journals.

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Introduction

Science is a powerful collective social endeavor that systematizes knowledge by providing testable explanations, making predictions, and solving or controlling problems for the betterment of our world. Because of its impact, the implications of scientific progress are huge for the future of mankind and our planet. Creationism is a religious belief supported by sacred scripture that promotes the notion that the universe and life originated from acts of divine creation. In the past decades creationism has given rise to pseudoscientific movements, such as Intelligent Design, which discredit the existence of evolution to bolster the explanation that the universe and life are the products of an intelligent cause. While broader teleological reasoning has been used, the main argument is that biological complexity is irreducible and can only be explained by the existence of an intelligent 'designer'. The Intelligent Design movement has found creative ways to disguise its creationism agenda as a 'scientific research program' and has applied numerous tactics to misinform the public, convey vague, contradictory, exaggerated and unproven claims, and curtail the teaching of evolution in schools and scientific progress.[1] The recent article published in this journal by B. K. Shanta[2] of the Sri Chaitanya Saraswat Institute represents another attempt to devalue the study of the origin and evolution of life and promote creationism, this time within the theistic evolutionary framework of Vêdanta. Here I discuss how the tenets and tactics of Vêdanta scholars are similar to those of the Intelligent Design movement. The focus simply shifts from a divine 'designer' to an all-permeating divine 'consciousness'. I also show that Shanta's claim that giving "proper attention" to ancient Vêdanta philosophy can fuel a research program in evolution is misleading. Creationism and scientific progress, especially related to the field of evolution, are incompatible.

Scientific progress as an epistemological search for truth

A framework of theories is at the heart of scientific progress.[3] Theories are well-substantiated explanations of some aspect of the natural world, which are supported through repeated observation and experimentation. The scientific method interfaces theories (in constant revision) with empirical evidence and applies logical and statistical tools of confirmation to evaluate their match.[4] The tools of *empirical content*, the breath and scope of evidence that the theory explains, and *degree of corroboration*, an estimate of the scientific value of the theory and a report of its past performance, have been particularly useful in this regard.[5] Moreover, there have been numerous philosophical frameworks for conducting science. Most scientists however are fallibilists. They take a middle position between rationalists, empiricists and positivists that share a model of epistemic growth in which knowledge is a gradual accumulation

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of 'justified truth beliefs' and instrumentalists that consider theories as mere truth-free instruments for measuring scientific progress. Fallibilists recognize that certainty can never be achieved but that science is self-corrective and that its methods converge toward the truth. Karl Popper[5,6] and its hypothetico-deductive framework for overthrowing theories defended this position, contributing the notions of 'verisimilitude' and 'truthlikeness' as objective measures of how a theory approaches the truth. These notions have been advanced considerably in recent years, recognizing that scientific progress is normative and multifaceted.[7,8]

The study of evolution embraces the scientific method

In science, 2 major frameworks have been developed, one concerned with the search of universal statements capable of explaining present events with high predictive power (e.g. the search of laws) and another concerned with science of process and history explaining how present events have been molded by the past.[9] These nomothetic (universal, predictive) and ideographic (historical, retrodictive) approaches have an ultimate goal of explaining past, present and future events of natural systems. Remarkably, the interface of theory and experimentation takes full and explicit advantage of the scientific method in the ideographic study of biological evolution, which is the aspect of science that is most attacked by creationism. This includes application of logical and statistical frameworks for evaluation of the strength of historical hypotheses and their refutation (see for example Lienau and DeSalle.)[10] Phylogenetic analysis with its more than half a century of conceptual and analytical developments has advanced the tenets of scientific progress with powerful algorithmic data mining tools drawn from computer science and exploitation of the explosive increase of biological data (from genomes to phenotypes) that is propelled by the ongoing genomic revolution. Diverse and numerous lines of evidence confirm the validity of phylogenetic reconstruction, including molecular resurrection (e.g., coral pigments),[11] the existence of a universal genome biology (e.g. proteomes),[12] and the yearly production of effective viral vaccines (e.g., influenza viruses).[13] Evolutionary theory has high explanatory power; the truthlikeness, verisimilitude, empirical content, and degree of corroboration of evolutionary change is high. Most importantly, the study of evolution fully embraces the scientific method and the benefits of epistemological progress; it is already grounded by hundreds of years of focused research on many fronts, well before the times and ideas of Darwin and Wallace that Shanta disparages.

Vêdanta views are creationist and pseudoscientific

Shanta's opinion article professes Vêdanta creationism by claiming consciousness is the underlying universal force that explains it all:

"*This Vêdantic explanation that unitary Supreme Cognizant Being is the source of everything is founded on two scientifically verifiable facts: (1) Life comes from Life, and (2) Matter comes from Life. Consciousness arises from consciousness, or life comes from life. … Srimad Bhagavad-gitã in a capsule form describes the entire Vêdantic philosophy right from the understanding of the soul (âtman) to the understanding of the ultimate purpose of life. Vêdanta holds that different forms (species) are original archetypes that accommodate different varieties of consciousness through which the transmigration of the soul (âtman) takes place on the basis of the evolution of consciousness. The body is a biological illusion of the consciousness of the soul (âtman) and from an amoeba to a human being, all the different varieties of forms are representations of different stages of conditioned consciousness. Following an endless cycle of birth and death ('transmigration of the soul' or Metempsychosis in Greek), the soul (âtman) keeps on wandering in different grades of conditioned states of consciousness (subjective evolution of consciousness) by obtaining a body suitable to that consciousness until it attains the pure consciousness. The soul (âtman) obtains a body in next life based on the consciousness in which it left the previous body. This ancient theory of evolution is based on the subjective evolution of consciousness and the Darwinian objective evolution theory of bodies is a perverted representation of this ancient wisdom. In Darwinism, evolution means transformation of bodies, and in Vêdantic view evolution means transformation of consciousness.*"[2]

The Vêdantic view therefore nurtures the belief of a 'Supreme Cognizant Being', the stasis of the material world, and the transmigration of the soul. The Vêdantic view is based on sacred scripture and is creationist. However, the goal of Shanta's paper is to attack the study of the origin and evolution of life in "*an attempt to elaborate how earlier ruled out concepts of genuine biology* (sentience) *have been again substantiated by empirical evidence.*" [2] In other words, the goal is to substantiate the ability to feel, perceive and experience subjectively to the detriment of what we know of evolution and biology. Such initial goal, which perverts a field of study that embraces the scientific method in favor of a tailored creationist agenda, makes the entire presentation of the manuscript a futile exercise in pseudoscience.

Shanta's mantra continues: "*The material origin of life and objective evolution are only misconceptions that the biologists must overcome. Hence, abiogenesis is an insult to the life force.*"[2] Having identified that the Vêdantic

view considers the origin and evolution of life as a perverted representation of the Vêdantic creationist wisdom, any statement that attempts to bring scientific discourse to the analysis of life an consciousness must be considered an Intelligent Design encroachment on science and education. In other words, this new Vêdantic movement is not interested in a framework of theories nor is willing to fulfill scientific progress. Instead, it demands a costly and doctrinarian 'Ulysses pact'.

Vêdanta tactics resemble those of Intelligent Design

Quoting the Council of Europe's 2007 report on Intelligent Design and its tactics, "Creationism claims to be based on scientific rigour. In actual fact the methods employed by creationists are of 3 types: purely dogmatic assertions; distorted use of scientific quotations, sometimes illustrated with magnificent photographs; and backing from more or less well-known scientists, most of whom are not specialists in these matters. By these means creationists seek to appeal to non-specialists and sow doubt and confusion in their minds."[14] I add to the list the tactics of inciting confusion by equating science with religion, seed uncertainty by exploiting the fact that scientific progress nurtures controversy, and ignoring evidence that is detrimental to creationism.

Shanta supports what he professes by mislabeling and misquoting the work of others, such as the work of the "*Vèdantic scholars Aristotle, Kant and Hegel.*" [2] He misuses the rightful and ongoing critique of neo-Darwinian ideas,[15,16] placing it out of context to discredit evolution. He finds support to creationist views where no such support exists (e.g. consciousness[17]), and attacks the origin and evolution of life field while ignoring major advances in systems, synthetic, integrative, genomic and evolutionary biology. He even twists arguments to distract from the real indoctrination motives: *"the view that a supernatural being, God, is external to living organisms and that He imposes form on matter from the outside (intelligent design) is also reductionistic, and shows a logical fallacy*." This showcases tactics that are typical of Intelligent Design.

In summary, Vêdantic philosophy is creationism. Creationism is incompatible with scientific progress. Creationism has no home in scientific journals.

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