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**On the scientific status of Darwinism, Lamarckism, Creationism and Intelligent Design – a comparative analysis**

The answer to the question of the origin of human species has been sought by philosophers, theologians and scientists since the advent of human civilization itself. Whenever a question is approached from a multitude of bends of mind, there are bound to be overlaps as well as contradictions between the conclusions reached. For an academic, it is of great significance to be able to clearly distinguish between these approaches so that he or she can fairly assess the intellectual value and utility of the conclusions reached. That is why the issue at hand is so important. A high school Biology examination paper portrayed four different theories of the development of species, namely Darwinism, Lamarckism, Creationism and Intelligent Design in the same light. By doing so, the paper gave the students of Biology the impression that all four theories were viable scientific alternatives – completely disregarding the plethora of debates spanning many years that have existed within the scientific community as well as outside it on the status of these theories. While, on one hand, the act of presenting the varying accounts of speciation together may be seen as an attempt to preserve some degree of balance between the different ideas that abound in academic circles worldwide and not to inculcate a bias towards one particular school of thought; on the other hand, it would be unjust to young minds to give them a grossly flawed impression of what’s within and what’s outside the realm of science.

The issue, therefore, boils down to looking at whether each of the theories mentioned above qualify as scientific. To address this issue, this paper will first delve into the nature of science itself, discussing some of its defining characteristics as a way of thinking about the universe. More specifically, it will discuss what exactly a scientific theory is, briefly touching upon the tenets of scientific practice that ultimately lead to the development of a theory. Having clearly identified the framework of science, the paper will move on to analyze each of the four alternative theories and measure them up against the defined criteria and derive conclusions on the status of the theory,i.e. whether it is scientific or not.

While it is difficult to assign a standard and clear-cut definition to what strictly constitutes as Science, the demarcation between scientific and unscientific study is clear enough to facilitate solid debate in academic circles. Here, I will specifically be using Michael Ruse’s approach in identifying the defining features of Science. In his article *Creation Science is not Science,* Ruse has pointed out the emphasis on empirical observation, a search for regularity in nature, explanatory utility, predictability, testability, tentativeness and falsifiability as the key features of science. A discussion of what is meant by each of these features in the context of academic practice is presented below.

Science attempts to explain the empirically observable world by trying to arrive at a deeper set of laws and/or relations that may exist between quantifiable physical parameters. The explanation itself may invoke unobservable abstractions such as fields, photons etc to support its claims – these are nevertheless entities which obey natural laws and their effects are observable, e.g. electromagnetic waves. Moreover, the set of laws given by science are inviolable in the sense that they are not subject to an individual’s caprice neither are they specific to a particular culture or institution, hence claiming universality. In addition, the explanatory power of these laws is of fundamental importance. “A scientific explanation must appeal to law and must show that what is being explained had to occur. The explanation excludes those things that did not occur.” Along comes predictability. A theory with immense explanatory potential but with no predictions to make does not qualify as a scientific theory. This can be understood by taking Einstein’s theory of relativity as an example. Not only does it provide a sound explanation of the deviation of planetary orbits from those calculated using Newtonian gravitation, but also makes predictions regarding time-dilation and length contraction at very high speeds.

Then comes the Popperian notion of testability and falsifiability. A scientific theory’s predictions must be testable and falsifiable implying that if the results predicted by the theory are confirmed by experimental test, the theory stands corroborated, otherwise it’s falsified. For example, Kepler’s laws easily fit this criterion as any instance of observation of non-elliptical orbits would falsify them.

All of the above characteristics grant Science a very tentative stature. This does not mean that the laws of nature are tentative – rather scientists are themselves open to correction and improvisation of their theories in the face of new evidence that may emerge. For example, Newtonian mechanics was held to be descriptive of the true picture of the world for over three hundred years, until the advent of Quantum theory, which postulated that there were gaps in the earlier scientific picture of the universe that could only be filled by assuming a whole new ‘quantized’ perspective of nature.

Now, we turn to the question of whether each of the four theories of the origin of human species mentioned in the beginning, fit the above stated criteria for what qualifies as Science. Take Creationism first. The theory claims that all species of life were separately created by God about (6000-20,000 years ago) which means human beings had no shared ancestry with apes or any other form of life. Other claims of the theory (age of the earth, the great flood etc) vary according to whether it’s being proposed by a Biblical literalist or an Islamic creationist. This theory does not fit the scientific criteria on several accounts. One issue is the theory’s failure to explain certain phenomenon such as the isomorphisms that exist between the bones of different animals. It has no reason to give for the homologies present in limbs of humans and various other mammals, despite them having different functions to serve. Moreover, there is a complete lack of experimental pursuits among the creationists which means an absence of what constitutes as the hall-mark of modern science. Lastly, there is no notion of tentativeness associated with Creationism, i.e. creationists assume their ideas to be more or less eternal truths that are not subject to any change even though new evidence may emerge against these ideas.

Having demonstrated the unscientific nature of Creationism, let’s analyze Intelligent Design. Proponents of Intelligent Design theory claim that living organisms exhibit a great deal of ‘irreducible complexity’ as well as ‘specified complexity’ which could not have resulted out of naturalistic mechanisms or by chance alone. Therefore, there must be an intelligent designer who must have brought about the current forms of the species by deliberate design. Irreducible complexity refers to the composition of a system where multiple parts come together to perform a specific function, but each part on its own could be of no significant value on its own. Intelligent Design supporters see evidence of design in this complicated assembly of individual parts, however, unlike Creationists they do not invoke a Biblical or Quranic God to explain away the design. Despite, their every attempt to keep religion out of the picture, the theory of Intelligent Design is a sophisticated philosophical proposition at best. As an aspiring ‘scientific’ candidate, it is still incomplete because of its inherent lack of ability to make any falsifiable predictions. Moreover, Science always uses precise terms in its theories that actually refer to testable entities in the universe. This theory is itself unable to identify a ‘designer’ that it invokes and is therefore self-defeating.

The analysis of Lamarckism is more straightforward because it happens to be a more or less generally abandoned theory of evolution because the advent of Mendelian genetics disproved its claim that acquired traits can be passed on to generations. Rather, only the traits for which genetic information exists on the chromosomes of an organism are carried on to further generations. Having been falsified the theory of Lamarckism no longer holds the status of a scientifically viable hypothesis.

This leaves us with Darwinism, I.e. evolution through natural selection as a means of speciation. The theory is based on empirical observation, as biologists have observed evidence in fossil records as well as the molecular and genetic make-up of organisms that invariably points towards Darwinism. Also, the theory provides substantiated explanation of the homologies found amongst organisms in terms of common descent. It also makes predictions as to the characteristics and morphology of intermediate organisms which may be tested as new fossil records are unearthed. Of course, the theory may not be perfectly corroborated in the absence of certain crucial fossil records, no evidence to the contrary has been found either and therefore the theory is not yet falsified.

Having scrutinized each of the four alternatives in the light of science’s defining features, it may be concluded that presenting them as equally viable scientific hypotheses is a shoddy step on part of the examination board. Darwinism still has its weaknesses, but as compared to other theories it rests on the most solid foundations and should therefore be taught to students of science without any biases, in the interest of scientific integrity and advancement.

**Bibliography**

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