

Guest Editorial

The Evolution Debate

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How did we humans come to be in the expanding, evolving universe known through astrophysics and cosmology? It is quite clear that we do not know everything about this process. But it would be scientifically untenable to deny that the human brain is a result of a natural process of the development of ever more complex chemistry in an evolving universe that is 13.7 billion years old and contains about 100 billion galaxies, each of which contains on the average about 200 billion stars of an immense variety. After the universe became rich in certain basic chemicals through the death of stars of various masses, those chemicals got together in successive steps to make ever more complex molecules. Finally, in some extraordinary series of chemical processes, the human brain came to be the most complicated machine that we know.

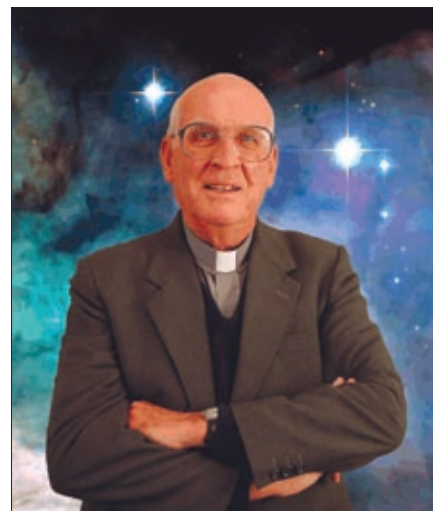
Did this happen by chance or by necessity? The first thing to be said is that the problem is not formulated correctly. It is not just a question of chance or necessity because, first of all, it is both. Furthermore, there is a third element here that is very important. It is what I call “opportunity.” What this means is that the universe is so prolific in offering the opportunity for the success of both chance and necessary processes that such a character of the universe, known through modern science, must be included in the discussion.

Having viewed the science of evolution on a cosmic scale, let us look more closely at biological evolution. The great achievement of Charles Darwin was precisely to bring the study of life into the ambit of the sciences already well established in physics and chemistry. With him the origins of the many life forms about us became truly a scientific study, which attempted to explain all natural living phenomena by natural causes. And the attempt is just that: an attempt. And it has to our day had immense success. To date there is no other scientific explanation that rivals it. Once life began, and we do not yet know how, all living beings, including ourselves, came about by chance mutations in the original being,

which result in stepwise changes in the products carried out by natural selection in the environment in which the products come to exist. Those products survive that can best adapt to their environment. There is, therefore, an apparent destiny

toward more perfect beings, i.e., beings better able to adapt in this process; but the apparent destiny can be explained by the natural process itself. This apparent destiny is also seen in the cosmological and chemical evolution that preceded life, since by the nature of chemistry the future of more complex molecules is more determined than that of less complex molecules. Evolution, cosmological, chemical, and biotic, is a creative process.

However, ever since Darwin’s proposal a debate has raged, especially in the United States, about the threat that such a scientific explanation might pose for religious belief. This has had its effect in different ways upon all religious congregations from the most fundamental to the most liberal. Within the past decade in the United States there has grown a movement that goes commonly by the name of the Intelligent Design Movement (IDM). Its fundamental claim is that there are living organisms that are so complex that they could not have emerged through evolution but must have been designed by an intelligent being. This obviously presents us with a direct and basic confrontation between science and religion. The life sciences seek to explain all living



George V. Coyne

beings through natural processes and claim that any explanation such as intelligent design lies outside of science. The IDM presents itself as science and yet it certainly appears, with its appeal to an intelligent designer, to be a religious movement. What does a scientist who is a religious believer think of this confrontation?

One gets the impression that certain religious believers fondly hope for the durability of certain gaps in our scientific knowledge of evolution so that they can fill them with God—the Great God of the Gaps, or an “intelligent designer.” No system has yet been proposed that passes the test of requiring design. The fallacy of the intelligent design movement is the failure to accept what is at the heart of neo-Darwinian evolution, namely, its creativity. Following a step-by-step process of mutations and adaptation through natural selection, an organism that has a certain function before mutating and adapting can have another function afterward. The organism also can be integrated into a more complex organism of which it then constitutes a part. Thus have we come to be.

The science of evolution, as is true for all of the natural sciences, is by its very methodology totally neutral with respect to religious beliefs. It cannot be used either to assert or deny the existence of God.

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