Evolution's Greatest Find

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Evolution has sounded strident notes in the chorus of traditional answers to the question of God, his existence and his relationship to the world. Today, a century after the publication of *The Origin of Species,* there is hope of discussing this topic in a more dispassionate milieu than was possible in years past. What has evolution to say of the existence of God?

One renowned evolutionist, Father Teilhard de Chardin, sees all creation unravelling from the Alpha point of its birth and evolving in a process of cosmogenesis toward the Omega point of convergence with its Divine Creator. Julian Huxley, on the other hand, derives this conclusion from evolutionary facts:

> The time is ripe for the dethronement of gods from their dominant position in our interpretation of destiny, in favour of a naturalistic type of belief-system. The supernatural is being swept out of the universe in the flood of new knowledge of what is natural. It will soon be as impossible for an intelligent, educated man or woman to believe in a god as it is now to believe that the earth is flat, that flies can be spontaneously generated, that disease is a divine punishment, or that death is always due to witchcraft.[1]

Using the facts unveiled by Chardin, Huxley, and other evolutionists, and employing their principles wherever possible, let us re-examine the evidence for a Providence which directs the world in which we live.

First we shall consider the matter which is customarily advanced as an argument for world order. Three levels of observation present themselves for our study: the microscopic and submicroscopic world of the atom and the elements, the world of people, fresh air and sunsets which we experience everyday, and the world of the heavens which are explored by giant telescopes and Explorer II satellites. At first glance each of these worlds boasts some stability. In the microcosmos, elements are distinguished by

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[1] Julian Huxley, *Religion with Revelation* (New York: Mentor, 1957), p. 62.

their respective atomic weights. The fact that each element possesses its own properties and weight forms the basis for the understanding of the structure and interaction of chemical compounds. The expression of these properties in the periodic table reveals the order and relative stability that exists at the level of the atomic species.

The world that we encounter daily is characterized by constants and by a delicate balance and sensitivity. Horse fossils which date back 60,000,- years indicate that at least some species are relatively enduring. The organic world displays its balance constantly. So eager is nature to survive, and so well balanced is it that, for example, the preservation of only one oyster egg in half a billion will preserve the species from both overpopulation and extinction. The eyeball is so sensitive to spotting light that it sees a match lighted in the dark fifty miles away; the ear is so finely tuned to hearing sounds that were it a few pitches more sensitive it would take in the constant clatter of molecules that inhabit the air. It is a humbling fact to know that our lives depend on a thin curtain of poisonous ozone located ten to thirty miles above the earth that is even now filtering out the sun's lethal ultraviolet rays and allowing life to prosper and not perish here below. Without the atmosphere that protects the earth, temperatures would reach 230° F. in the daytime and drop to —300° F. at night. Indeed our daily lives are very much attuned to the regularities of nature. Business, pleasure, travel and survival itself are tempered by the cycle of nature: the changing of the seasons, the amount of rainfall, the division of day and night, the distribution of cold and heat.

Neither is the great stellar world exempt from constants. The balance of the spheres and of the solar and stellar systems is crucial for the continued existence of the universe. Spectroscopic analysis of the regular luminiferous diffusion of stars provides astronomy with much of its basic information. An estimate of the elements of stars, the distance of stars, the temperature of stars, and ultimately the size of stars depends on this regular beat. In addition astronomy makes extensive use of "firmly established law[s] of terrestrial physics."[2]

These examples may warm the heart of one stalking the universe for telltales of a world order, but to modern science they supply no evidence of such a nature. Physicists probing the atom find that some particles last for one ten-millionth of a second. While the stability of the periodic table

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[2] Hermann Bondi, "Astronomy and Cosmology," in *What is Science?* James R. Newman, ed., (New York: Washington Square Press, 1961), p. 74.

provides a neat fixture for chemical analyses, it is probable that a few billion years ago the elements did not even exist. Beneath the apparently solid earthly terrain on which man walks, ninety-seven per cent of the earth's body lies in a molten state. The estimated one trillion galaxies that fall within the range of our telescopes were mere gaseous states billions of years ago. The paleontological record reveals that the organic world is replete with extinctions and dead end roads for whole species as well as for individuals, while much of what has survived was preserved by random selections of chance genetic transmutations and haphazard selective pressures. Understandably, modern science labels as naive any attempt to assign an unalterably static order to the world in which we live.

At the same time, however, science establishes a unity in creation: It sees discordant phenomena coming together and correlating under one order. In the documentation of history and prehistory, from the emergence of amoebae to the genesis of galaxies, creation appears coordinated. The least protozoa is dependent upon the atmospheric conditions in which it is placed. This environment is created not only by the sun and cosmic rays (whose existence and properties in turn are not independent of other stars of our galaxy and further galaxies), but also by the work of organisms on earth. Trees, for example, render the atmosphere healthy by their absorption of carbon and liberation of oxygen. Neither is this process of photosynthesis an autonomous process, for it cannot take place without sunlight and other conditions. Life and death, generation and corruption, gravity and cosmic energies, are concordant processes. Bertrand Russell, after observing that the fall of a body is influenced by the shape of the body, the density of air, latitude, altitude, even the position of the sun and moon, expresses this necessary conclusion:

> In short every advance in science takes us further away from the crude uniformities which are first observed, into greater differentiation of antecedent and consequent, and into a continually wider circle of antecedents recognized as relevant.[3]

Somehow the universe is a system, for there exists an interrelation of parts discoverable by man. As our instruments probe deeper into the micro world and further into space, this order appears increasingly complex.

Does any order exist in the biological community? In the ruthless

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[3] Bertrand Russell, "On the Notion of Cause, with Applications to the Free-Will Problem," in *Readings in the Philosophy of Science,* Herbert Feigl and May Brodbeck, eds. (New York: Appleton-Century-Crafts, Inc., 1953), p. 392.

Darwinian world where genetic mutations and selective pressures respect no individual or species, who will claim an order? However random and lucky the survival of a single species or individual may appear, there is a discoverable order in the biological world. Julian Huxley says, "Evolution can be envisioned as a progressive realization of intrinsic possibilities." He defines evolution:

> [It is] a directional and essentially irreversible process occurring in time, which in its course gives rise to an increase of variety and an increasingly high level of organization in its products.[4]

Although evolution is not predictable, says Gaylord Simpson, neither is it haphazard.[5] Huxley agrees.

> While to the evolutionist ethics can no longer be regarded as having any absolute value, yet their relativity is neither chaotic nor meaningless: ethics are relative to a process which is both meaningful and of indefinitely long duration—that of evolutionary progress.[6]

Father Teilhard perceives a "combined movement toward unity" and a "precise orientation" and "leading axis" in the evolutionary process.[7]

The acme of evolution is man. Compare Theodosius Dobzhansky: "Judged by any reasonable criteria, man represents the highest, most progressive, and most successful product of organic evolution."[8] Julian Huxley seconds this conclusion.

> Most remarkble of all [the characteristics of evolution], however, is the rise in level of organization. . . . We find that later

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[4] Julian Huxley, "Evolution and Genetics," in *What is Science? ed. cit.,* pp. 296, 294.

[5] Simpson, "The History of Life," in *Evolution after Darwin,* Sol Tax, ed. (Chicago: 1960), vol. 1, p. 166. Quoted by Raymond J. Nogar, *Evolution: Its Scientific and Philosophical Dimensions* (River Forest, Ill.: Albertus Magnus Lyceum, 1961), p. 44.

[6] T. H. and J. S. Huxley, *Touchstone for Ethics* (New York: Harper and Brothers, 1947). Quoted by E. H. Erikson, "The Roots of Virtue," in *The Humanist Frame,* J. Huxley, ed. (New York: Harper and Brothers, 1961), p. 148. Italics mine.

[7] "Esquisse d'un univers personnel," 1936. Quoted by Claude Tresmontant, *Pierre Teilhard de Chardin* (Baltimore, Helicon Press: 1959). pp. 15, 22.

[8] Theodosius Dobzhansky, *The Biological Basis of Human Freedom.* (New York: 1956, pp. 87-88. Quoted by John C. Greene, *The Death of Adam,* (Ames, Iowa: Iowa State University Press, 1959), p. 338.

> evolution has produced organizations of such almost miraculous elaboration as the flying birds, the gigantic plankton-feeding whales, the temperature-regulating mechanisms of higher mammals, the societies of ants and bees, and the human cerebral cortex—the most complex system of which we have any knowledge.[9]

Father Teilhard agrees. "The human element can legitimately be viewed by science as a prolongation and the crown, at least provisionally, of the living element."[10] While the direction of the non-living world is characterized by the sun that is burning itself out or by the earth whose rotation is slowing down, the organic world is establishing its niche in the system with species that are increasingly complex and active.

Granting a coordination and progress in creation, how did they get there and how are they maintained? Is it chance that governs the world? As we have already mentioned, chance mutations and chance differentiations of temperature or rainfall, of overspecialization and of breeding trends account for the survival or extinction of organisms. Any good naturalist philosopher establishes chance as a valid physical cause.[11] Chance can well be the reason for the erratic, spasmodic, contingent modes in nature.

Even in chance, however, there is an order. The probability of flipping heads in a single toss of the coin is one-half. There is a statistical frequency manifest if I flip a coin five hundred times and two hundred and fifty times it turns up heads. Where such a mathematical average exists, chance is not merely random. It has a cause. "This principle [of causality] is not violated by events of the kind that has usually been studied in works on probability."[12] On the principle of regularity in chance, insurance companies are established. The statistical laws of probability accent the law we assert: that in spite of the waste, trial and error and chance in nature, the over-all progressive trend indicates an ordered state. Because chance or accidental happenings are neither all nor the most important of the occurrences of nature, chance cannot be the only cause.

What then is the cause of this order? What is the reason that the sum

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9 "Evolution and Genetics," *ed. cit.*, p. 256.

10 From the lecture, "The Human Zoological Group: Its Structure and Evolutive Directions." Quoted by Tresmontant, *op. cit.*, p. 16.

11 See Aristotle, *Physics*, II, 5, 197a 5-6.

12 Edmund Taylor Whittaker, "Mathematics and Logic," in *What is Science?*, *ed. cit.*, p. 62.

product of so much waste, trial and error and chance can be a coordinated and higher system?

To answer this philosophical question let us consult three persons. First, a housewife on the basis of her daily experience, secondly a biologist who possesses a refined knowledge of his science; and finally, a philosopher whose thought has been perennially acknowledged as objective and wholistic. We ask the housewife what kind of cook would be required to produce an excellent meal in an oven where the temperature rises and falls spasmodically so that the food is scorched or made to evaporate? Add to this hazard a cooking pan with a hole in the bottom through which ingredients fall out even before they are stirred into the dish. Only a lucky cook could produce a good meal under these conditions. But if this situation were repeated frequently, almost all the time in fact, we would call this cook who could anticipate the outside influences on her cooking and could adjust her art to produce a fine meal, an exceptionally wise and intelligent cook.

Julian Huxley expresses this common sense principle when he discusses man's ability to affect evolution by his intelligence.

> Man's destiny is to act as the agent of the evolutionary process on this planet, by enabling it to realize new and higher possibilities. This he can accomplish only if he utilizes to the fullest possible extent . . . the employment of cumulative experience in the service of conscious purpose. . . . Thus the long-range task of the human species is to establish a fully conscious common purpose, based to the fullest possible extent on scientifically established knowledge.[13]

Purpose, direction and progress require knowledge and intelligence.

Huxley goes on, "Once this has been done, . . . fulfillment rather than efficiency, will become the overriding aim." His principle is correct: Where intelligence is applied there is fulfillment. However, as Huxley and other scientists have established, the trend of evolution is a trend of fulfillment. Evolution has culminated in man. Where, we ask, is the intelligence accounting for this fulfillment? What is the explanation for this order unless it be an ordering agent? How can it happen that chance and accidental causes can collaborate to produce fundamentally consistent and *per se* effects?

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[13] Huxley, Evolution and Genetics," *loc. cit.,* pp. 305-306. The following quotation is from p. 306.

For the answer expressed in exact scientific terms, we turn to a philosopher, Thomas Aquinas.

> Contrary and discordant things cannot, always or for the most part, be parts of one order except under someone's government, which enables all and each to tend to a definite end. But in the world we find that things of diverse natures come together under one order, and this not rarely or by chance, but always or for the most part. There must therefore be some being by whose providence the world is governed. This we call God.[14]

For the philosopher, as for the housewife and the scientist, the only explanation for an overall direction in a system that entails much waste and chance is intelligence. The case is analogous to the intelligence required to calculate the hazards to be encountered in Mariner II's trip to Venus. The target was reached; a knowing guide—the scientist—was needed.

The laws expressed by science, whether they be the law of gravitation, the law of conservation of energy, the law of displacement, or the law of natural selection, are discovered by men, not invented; they are found, not imposed.

> Leibnitz long ago described the procedure of science as like the solving of a cryptogram; and this is a deep and an exact remark. In a scientific research, we have to do the opposite to transmitting information, so that we have to turn the theory of information backward. Instead of sending messages in a known code, we receive messages in an unknown code. The aim of science is to break the code of nature.[15]

The code of nature demands a code-giver; it is written in a changing and dynamic, yet directed and progressive script. The laws of nature require a law-giver. The plan of creation, whether it be evidenced by the logarithms

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[14] Thomas Aquinas, *Summa contra gentiles,* I, c. 13, n. 35. Attributed to St. John Damascene, *De fide orthodoxa,* I, 3 (PG, 94, col. 796CD); and also, "Motion of natural things to a certain end indicates that there exists something higher by which natural phenomena are directed and governed to an end. Therefore since the course of nature as a whole proceeds and is directed with order to an end, it is necessary to posit something higher which directs and governs these things like a master: And this Master is God." (Thomas Aquinas, *Super Evangelium S. Joannis lectura,* prologue, n. 3.)

[15] Jacob Bronowski, "Science as Foresight," in *What is Science?, ed. cit.,* p. 454.

with which the spider spins his web, or the syncretization of the whirling planets and galaxies, needs an intelligent Planner.

What attributes does the picture of the universe require its intelligent Ruler to possess? Because the gamut of incidental and discordant parts of the system compose one order, they must be under the government of not several, but one intelligence. Moreover, the intelligence that governs the world must be a providential and interested governor. The intricate balance that must be maintained in the biological community in the face of violent attacks from forces of chance and waste, and the exact sensitivity that is preserved against all foreign onslaughts, makes untenable the thesis that the world is merely drifting unwatched.

The objection is raised that nature suffices. The explanations of variables proffered by scientific investigation explain reality and the introduction of a *deus ex machina* or a meddling, many-fingered Deity is unnecessary and unscientific. The entrance of a Providence that explains the direction of the universe, however, is not an intrusion. It is a concurrence. The wise ruler knows and plans for his government, but he delegates the actual carrying out of his plans. This management, its bustle and its mutability, with its waste and its chance events, is most often the object of the scientist's study. It is the field of secondary causes. These causes carry out the designs of the interested, yet generally non-interfering Ruler. Indeed, the Ruler causes the continued existence of all the players in this volatile drama. The laws of the program are his laws.

"Beginning with the world of physical order in which man's destiny is cast,"[16] we have seen that the facts that evolution has uncovered are not self-explanatory. Evolution has painted a graphic picture of the need for an over-seeing Intelligence. When looked at as one looks at a whole landscape and not mere individual events, creation yearns more poignantly than was ever before realized for an intelligent Being that unifies, plans and provides for this vibrant and progressive cosmos.

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[16]Huxley, *Religon without Revelation, op. cit.,* p. 58.