The Purpose of Man in the Universe

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In his series of BBC talks, published as The Nature of the Universe (Blackwell, 1950), astronomer Fred Hoyle concluded with a question and a surmise. "What is man's place?" he asked. Are we "ingenious machines," having no significant connection with the cosmos? Or is the Bible right in placing man at the center of the universe, the primary object of a personal God's solicitude? Dissatisfied with available conclusions, he offered an opinion both humble and hopeful:

When by patient inquiry we learn the answer to any problem we always find, both as a whole and in detail, that the answer thus revealed is finer in concept and design than anything we could ever have arrived at by a random guess. (p. 118)

Within their field, ecologists would probably concur. Each natural species—animal or plant—seems so perfectly made for its specific task that one is led to expect to find a similar perfection in the human organism.

Ecology studies the way the various species interact in the natural scheme. One of the most familiar examples of this interaction is the bee which, in its quest for nectar, transfers fertilizing pollen from flower to flower. A similar coordination of work appears among all the species. Plant seeds pass intact through animal digestive systems, thus achieving wide dissemination and good opportunity for growth. The effect of the warm's digestive activity is to fertilize the soil; the digestive habits of one species of woodpecker serves to preserve certain trees from destruction by excessive beetle populations, and so on. Under close scrutiny, nature's interaction appears as cooperative as it is competitive.

Individuals of each species, seeking their own fulfillment, actually play a creative part in a much larger pattern. Photosynthetically, plants convert solar rays into food which the insects, reptiles, and animals of ocean, forest, and plain gradually pyramid into what ecologists call the "climax culture."

A growing respect for nature derives from this 60-year old science. For instance, the natural balance of species in any locality appears to be a richer and more efficient user of solar energy than man brings about artificially. This discovery has led to the development of so-called "organic" farming, the compost heap, and many other changes in conservation, fishing and agricultural programs.

All these conclusions apply, then, to the other species. But the human role is not so clear.

The ecology of man has yet to be explained. Within the natural balance on Earth, he seems not to fit at all:

Natural communities are characterized by a positive or favorable energy budget. Many, perhaps most, areas controlled by man are exploited, resulting in a negative energy budget, the final mark of which is unproductiveness and abandonment. (Encyclopedia Britannica, 1954; 'Plant Ecology')

The fire, clearing, drainage, agriculture, city-building, smoke, etc. of human activity in terrestrial history seems to work counter to all
the delicate energy-exchange of nature. Man has powers which permit him to overwhelm, exterminate, or exploit all other species. Organic farming and conservation programs barely mitigate his tendencies to crush all before him.

Throughout his history on Earth, man has appeared anomalous. For overbalancing the other species on the planet, his role has seemed more destructive than anything else. Calling upon the stars and the heavens for salvation, he has worked, fought, suffered and died—often carrying to his grave the deepest doubts about the purpose and value of his existence. Whereas all other elements of the natural order seem to find their places and to fulfill their roles in calm acceptance, human beings exhibit confusion. Why this anxiety, this storm and stress? What is man's place in the universe anyway? Analyzing his activity within the frame of nature on Earth has so far yielded no satisfactory ecological explanation.

Recent events have opened up the idea of an entirely new answer to the ancient riddle. As outer space becomes a felt reality, as interplanetary exploration becomes a scientific possibility, a new hypothesis about man presents itself.

Nature surely extends far beyond any one planet. Earth spins within a universe, whose myriad stars almost certainly have evolved countless planetary systems teeming with life. Man's place in the natural scheme, then, may be one which extends beyond the limits of a single planet.

Since Galileo, the idea of a living, populated universe has been familiar. That is the outlook of leading astronomers today—e.g., Jones and Hayle of Great Britain, Shapley and Struve of the United States. At least two of these men further believe that biochemical laws favor a similar evolution on other planets. No one specifies the color or size, but the stated probability is that—if we keep going out into space—this, or a later, generation will encounter beings resembling us.

If human beings are indeed a normal planetary development throughout the universe, a theory of man should extend beyond the confines of any one planet and become broadly applicable. While our scientific observations are mostly limited to this single world, nevertheless our theoretical framework should approach man as a commonplace organism frequently occurring and active in the larger natural scheme.

Within the acknowledged limitation of our experience, a philosophical approach to the problem can yet be made from available scientific sources. The allied disciplines of evolutionary biology and of ecology offer the basis.

Certain characteristics distinguish man from other species, but they do not necessarily set him apart from nature itself. As a mammal, man converts specific forms of energy into other forms. Within his own body he ingests and processes certain fruits, nuts, leaves, roots, flesh and bones into sound, heat and action. His defecation and finally his dead body nourish plants. Thus he forms an integral link in the natural energy chain.

His differences may simply fit him for an interplanetary role within the cosmic natural pattern. The same four limbs which in other mammals are designed either for quadrupedal walking or tree-climbing, seem particularly designed on human beings for another purpose: erect posture frees the hands for the manipulation of tools, whether rudimentary or ultramodern. Erect posture also raises the vision and makes it easier to focus upward and outward.

An instinctive interest seems to lead man to a close scrutiny of the heavens. For him astronomy is the "queen of sciences" and, for millennia, the only one. In the early periods of his progress he builds myths or religions about the celestial bodies, worshipping the
Sun and Moon, Jupiter, Venus and Mars, or Quetzalcoatl, or Odin. He locates his future salvation in an unearthly or other-worldly life in Heaven. He links his military adventures with celestial portents and his amorous desires to the Moon or to Star-dust. In all times and places, his history reveals a troubled consciousness of the great universe around him.

This celestial focus differentiates him and narrows his range of receptivity. If other animals are not far-sighted enough to see the stars, and almost certainly ignore them, they make up for it by perceiving things which man fails to note. A dog hears sounds which the human ear misses. The owl strikes at its midget prey when human beings are lost in the dark. Nearly all animals follow telltale scents too refined for human perception. Bats and fish respond to vibrations which man cannot feel, and so on. Human perception of the celestial environment and relative insensitivity to earthly sounds, smells, and vibrations apparently constitute an innate specialization within the natural scheme.

From the invention of the lever and the wheel down to the launching of artificial earth satellites, man has revealed a distinctive ability to carry out increasingly complex operations. This ability depends upon his elaborate communication system. Many species (e.g. birds) use systems of signals sounds, movements, vibrations—to coordinate group activities. The human system of symbols is much more elaborate. One of the most articulate of our species on Earth, Shakespeare, is calculated to have used over 25,000 different words; and, of course, an individual understands more words than he uses.

Through words, man communicates a partial reproduction of certain processes, both natural and artificial. If he is just one of the natural species having a particular ecological function, limitations on his faculties are to be expected. For instance, he can describe the growth and decline of the stars and galaxies of our universe, but he cannot tell why the universe exists. His reproduction of these processes is descriptive, comparative, analogical. He knows how to make an atom explode, but he does not know why an atom or an explosion is. Even within the descriptive realm his capacity to reproduce reality in words reaches limits beyond which he cannot go.

How big or how old is the universe? Such a question leads beyond man’s needs for practical activity. Here his symbols fail. On the one hand, he cannot conceive that the universe stops in a certain place, because something would have to be beyond; on the other hand, he uses the word infinity, but cannot really imagine it. He has equal difficulty in conceiving either that the universe had a beginning or that it did not.

Man is not omniscient, nor capable of being omniscient. His mental equipment is not designed to enable him to comprehend all the mysteries and ultimate meanings. However, it is well designed to enable him to operate at a certain level within the universe. He can learn the motions of the stars and planets, the gravitic, electromagnetic and other fields of outer space, the principles and mechanics of flight. For this sort of purpose, indeed, his equipment seems perfect.

Instinctively, sentient human beings have long been drawn to the idea of flight. For centuries men have actually dreamed of flying. Lindbergh’s crossing of the Atlantic Ocean drew forth a greater popular response than the victories of military heroes. From boyhood on, men find special thrills in speed, in operating complex machinery, in sitting behind the controlboard of fast-moving vehicles, in exploring the unknown. Within the limitations of earthly life, men put “rocket” engines in their cars, mount high stabilizer fins on the rear fenders, and seek rides which will take them “out of this world.” They read Buck Rogers and other space or science fiction. Such dreaming, reading, and play-acting seem wholly natural if the make-believe of today prepares for the reality of tomorrow.

Ecological analysis suggests that each species, pursuing its own ends, not only promotes its own survival but actually plays a useful role in the build-up of a rich, natural pattern of energy-exchange. Why space flight is important to human ends will be discussed in a later article. The ecological
activity is contained in two of the most memorable biblical accounts: the variant stories of the creation and fertilization of the Earth (Genesis 1 and 2); and the story of the preservation of species in Noah's ark (Genesis 7). His future activities in the universe may resemble those ancient tales.

The hypothesis developed in the preceding sections would also explain the struggles and strains of history. The main problems of successive generations would be to develop the required ability, based on the amassing of observations and formulation of words/ideas. The flexing of scientific muscles in war, the groping for purpose and meaningful relationship to the cosmos—through religion, philosophy and poetry—would all contribute to the growth of the species toward its mature role in the universe.

Such an incubation period may seem slow to a human individual. But the natural universe allows for long time-spans. The ages of stars and planets are numbered in billions of years. The growth of a rich natural balance in a swamp may require millions of generations of insects. Ecologic progression may depend upon thousands of generations of one type of anthropoid displacing thousands of generations of another.

It takes a caterpillar only a few weeks to develop into a butterfly. But the activities of the butterfly are relatively simple. It seems well within the time-spans of the natural scheme if humans require a few hundred generations to evolve within their collective cocoon or incubation-planet, before achieving the elaborate operation of interplanetary flight.

If these comparisons are valid, then the present historical moment is a vital stage of social transition from a quasi-larval condition to that of full flight. Successful accomplishment of the transition will partly depend on our true understanding of its character and purpose. To that end, this article has been devoted to an interpretation of the function of human interplanetary flight from the point of nature as a whole. A later article will review the usefulness of space flight directly to humans, evaluating its importance for our growth and ultimate survival.