# Life, the Ultimate Challenge

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As one approaches final retirement from the affairs of this world, regret for failing to have kept alive potentially fruitful ideas can gnaw at the sense of a life well lived. There is a challenge today with consequences that may well reach back to the very beginning of humanity's struggle toward civilization. There would be soul-searching regrets if this challenge is allowed to die. At issue are competing views of what it is that tells us a newborn will breathe, a grain of wheat will germinate, a towering redwood will stay green, an anthrax spore is infectious, a stem cell will show differentiation. Reaching back to Genesis, a fundamental entity becomes evident in the birth and death of all forms of life with human life being endowed with unique properties.

The challenge at hand is wide sweeping. At the highest level of intellectual pursuit, scholars can struggle with the principle that tells us that any phenomenon will remain indeterminate if its primordial nature is affected by the procedures that are required for its investigation. Erudite scholars debate how the prevailing view of the nature of the life entity influences the beliefs, values, and actions of a society. The lessons taught at all levels of the life sciences, knowingly or unknowingly, are likely to favor one rather than another view of what life really is. All in all, to comprehend the supreme of all of the mysteries of nature brings into play the ultimate of contemplative powers.

Meeting this challenge begins with realizing that both the well being and the miseries of humanity stem from the properties that must be inherent in the life entity. The living world presents a magnificent array of behaviors. How humans differ from other species in responding to the motivations that underlie these behaviors is of particular significance. No species can survive apart from taking advantage of the resources in the physical environment, but humans excel in developing these resources. At the same time, no other species demonstrates equally the unbridled urge of individuals to hoard such treasures. Other species produce and care for their young but only among humans do the side effects of sexuality become paramount. While other species provide spectacular examples where the survival of the group takes precedence over the well being of the individual, only among humans do ill-starred leaders require untold numbers of members of their own species to kill each other. Although they may be endowed with the wherewithal to gain dominion over all other species, not yet have humans lived up to the sense of responsibility that is inherent in such a challenge.

Until the true nature of life is revealed to everyone's satisfaction, the challenge at hand poses a soul-searching problem for those whose success of their calling hinges on influencing the beliefs of others. The safe approach is to examine the strengths and weaknesses that may result in accepting any view of what it means to be alive. But this is not easy to do. Competition between opposing views tends to divide humanity into factions with diverse values and ambitions. Rarely is the actual infrastructure of these differences shared openly with the lay public. More often, proponents have relied on playing up the positive and playing down the negative outcomes from accepting the particular view they embrace. Through the centuries, the results from this competition have been catastrophic. Millions of lives have been diminished even to the point of being sacrificed while the world's people have been kept unaware of the actual causes of their miseries. To the extent that this is a valid observation, further advance of humanity toward civilization depends upon bringing into the open the pros and cons of the prevailing views of what life really is.

The view of the nature of life with by far the longest history is referred to here as the *discrete entity view*. Although expressed in many different ways, fundamentally this view sees life as being comparable to energy: equally impossible to experience absent interaction with matter; equally inconceivable to destroy and improbable to create anew; and equally likely to be infinite in time and space. Henri Bergson (1859–1941), provides a relatively modern statement of this view.

> Life moves of itself, in obedience to its own inherent *elan vital* … [This] vital force has no aim, no goal, no guiding light outside it or guiding principles within it, it is sheer force, whose only inherent property is to flow, to push indefinitely onwards in any and every direction … something real in its own right.[1]

By way of personal correspondence and his book, *Energy in the Evolution of Life*, Reginald F. Fox assists in wording a second view that is identified here as the *physical-chemical view*. This view sees life as something that can be modeled and studied in terms of interlocking chemical reactions and allows the inference that life can be recreated if the essential reagents are brought together under the requisite conditions.

How people react to either of these views seems to hinge less on the integrity of the view and more on what

they are led to believe would be the consequences. The discrete entity view, particularly as it is delineated by Bergson, suffers from portraying life, particularly human life, as being apart from destiny. The physical-chemical view gains acceptance by those who stand to benefit from including life among the things that humans can oversee or manipulate. These two states of affairs have served to divert scholars away from rather than toward attempting to reveal the true nature of life. The citizenry has thereby been denied the opportunity to weigh the integrity and to contemplate the probable consequences of both the discrete entity and the physical-chemical view of the nature of life.

That life and physical-chemical reactions are inseparable cannot be denied. At the same time, each chemical reaction involves the assembly of specific kinds of molecules with their atoms in a degree of stable arrangement. Each molecule has its unique arrangement. Each has its unique properties. A reaction is the reshuffling of the atoms in these molecules in response to a disturbance in a way that minimizes the effects of the disturbance, invariably by absorbing or releasing energy. Chemical reactions gain notice when the properties of the products differ from those of the reactants. Photosynthesis provides a representative example. The reaction begins basically with a supply of water and carbon dioxide molecules with their atoms in stable arrangement. The absorption of light acts as a disturbance that results in the reshuffling of the atoms in the reactant molecules in ways that restore stability. The properties of the products differ from those of the reactants and, in this case, energy is absorbed.

The positive features of the physical-chemical view include providing insight into and possible management of how the life entity functions. However, there seems to be an unlimited number of different life forms each with its unique morphological, physiological, and, possibly, psychological sets of characteristics. The DNA complex in each life form is sufficient to initiate the physical-chemical reactions that are required to yield the products that exhibit the properties that distinguish each species. The staggering physical-capacities of the animal brain and the wide range of tropistic responses of plant tissues to changes in the physical environment are also to be taken into account. The human brain contains billions of nerves and trillions of synapses which store and process the information that is required to maintain an equally wide array of physical-chemical reactions. These neurons and synapses are constantly renewing themselves seemingly in response to the required stimulation or even internal reflection. But all of these positive features leave open, in fact suggest, the presence of a second entity beyond the ordinary realm of chemical and physical kinetics.

When the full dimensions of the life entity are projected against the limitations of a chemical reaction, the physical-chemical view of life becomes hopelessly inadequate. Furthermore, many of the efforts to describe facets of the life entity based on this view end up asking inert bits of matter to behave advantageously. Most puzzling of all is how each of the countless gametes of all species can be provided with the wherewithal that is required to maintain indefinitely a single physical-chemical reaction. It is an enormous stretch of imagination, for example, to think of each unit in the clouds of pollen or streams of sperm to be supplied with specific sets of the essential reactant molecules. When the shortcomings of the physical-chemical view are taken into account, the actual nature and dimensions of the life entity parallel those of energy.

Life and energy may be comparable entities but they have not been treated as such through human history. The science and technology phases of humanity have been free to explore the properties of energy and to exploit the effects of its transformations on matter. In sharp contrast, humanity's notion of the properties of the life entity and their potential consequences are more likely to reflect tribal lore than the results of scientific inquiry. Although technological advances have been unlimited, it is little wonder that the daily news suggests that humanity's responses to personal and social problems remain pretty much equivalent to those of the earliest steps toward civilization. For example, citing Zbigniew Brzezinski during the previous century, 167,000,000 to 175,000,000 lives were deliberately extinguished by politically motivated carnage.[2]

The way things are going in the America of today lays a seriously threatening challenge at the door of those whose professional calling includes influencing the decisions of their fellow humans. This challenge must not be allowed to die. The public is giving way to changes in the prevailing view of what life is all about—changes that hinge on the prevailing view of what life is. Of equal concern is the apparent abandoning of faith in the efficiency of the logic and methods that characterize the pursuit of science. This state of affairs leaves the door open for interests who can afford the services of spin doctors whose training and sense of values enables them to control the decisions that people make. It is urgent that we bring into the open the strengths and weaknesses of the physical-chemical and the discrete entity views of nature's most awesome phenomenon and how the acceptance of either view influences how America's people live and what they live for.

## Notes

[1]R. G. Collingwood, *The Idea of Nature* (London: Oxford University Press, 1945),138.

[2]Zbigniew Brzezinski quoted in http://users.erols.comwhite28/warstat8.htm