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"THE HUMAN PROSPECT AND THE 'LORD OF HISTORY' ": A PROCESS CRITIQUE

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Ralph Wendell Burhoe uses the discussion of Robert L. Heilbroner's *An Inquiry into the Human Prospect* in the September 1975 issue of *Zygon* to elaborate his own theory of the bases of religious phenomena and to project his own views of the contribution of religion to the future of humankind. He seeks "to show from a wider perspective of the scientific study of religion and a study of the religious implications of science that there is no need to fear that religion is necessarily incompatible with either the basic freedom or the basic rationality or truth of science."[1] He seeks to "provide evidence that religion has been what has made human freedom and the rise of science possible and . . . does indeed have . . . the capacity to generate in men a readiness or motivation to the kind of social altruism and concern for the long-range future that is not possessed by governments."[2] He aims to show that "the sciences depict a more-than-human reality that determines human destiny in very much the same manner as a traditional deity of religion."[3]

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In his remarks on the contributions of the other papers to the *Zygon* issue on Heilbroner, Burhoe summarizes the intent of his essay:

> It is my intent to show that the "Lord of History" [a phrase used to denote the reality which determines human destiny] is nowhere shown to be more "meaningful and true" than by some of the recent revelations of the sciences.[4]
>
> Since I think we have some information from both genetic and cultural evolution on the role and capacity of reason to convince and convert, and since we have an obligation to our posterity now, I shall seek to set forth in this paper some scientific grounds for religious hope.[5]
>
> I shall seek to show new scientific grounds for understanding how the "Lord of History" produces saints and suffering servants.[6]
>
> I shall seek to adduce more evidence on how . . . religion and science can get together.[7]
>
> We shall need . . . to make clearer how . . . *processes* of the "evolutionary adaptive generalizations" may be said to be related to the gods of religion, on the one hand, and how, on the other hand, societal selection can run counter to the genetic selection . . . geneticists have shown cannot produce altruistic creatures in a genetically diverse population. I think . . . simple, linear projections of disastrous futures for living systems are often invalidated because the "projections" of such disastrous futures often may be a part of the very negative-feedback mechanisms that prevent the disasters.[8]

Burhoe concludes his agenda with the following comment:

> In general, I shall seek to address myself to the elaboration of a scientific picture of religion that will be convincing to the scientific and skeptical minds who have not yet been provided with much scientific evidence for its virtues and potential. I shall build on the very significant elements of the situation presented by the other contributors to this issue and seek to provide additional information to show how religion (and the sovereign and often obscure system of transcendent realities to which religion has for thousands of years sought to relate us) may be reformulated and revalidated in the light of the sciences as salvatory for the present human predicament.[9]

In this formulation of his intentions Burhoe uses such terms as "science," "scientific study of religion," and "scientific grounds" in a global manner. He does not discriminate various understandings of science or explore alternative philosophies of science. Because of this global usage, it is very difficult to discern why he has selected a particular social scientific interpretation of religion and has rejected others.

As subsequent sections will make clear, he has drawn primarily on the French sociological tradition of Auguste Comte, Émile Durkheim, and Claude Lévi-Strauss. The German tradition, of whom Max Weber may be taken as the exemplar par excellence, is ignored com-

pletely. Burhoe does not indicate the bases for his selective appropriation of social theorists, but the French positivistic school is more congenial to his general way of interpreting religious phenomena than the neo-Kantian heritage manifest in Germany.

Here I shall elaborate what I take to be the salient aspects of the discussion in each section of Burhoe's paper. I shall then raise critical questions and discuss problems I encounter with Burhoe's discussion.

Ancient Biological Roots of Religion

A Summary of the Section. Burhoe begins his discussion by exploring the ancient biological roots of religions. He finds these "roots in ancient, genotypically programmed patterns of the central nervous system, . . ."[10]

He appeals to recent scientific findings to provide a rational interpretation of religion. He notes three phylogenetic levels in the human brain: "(1) the very old reptilian level which generates our *instincts* including those involved in religion, (2) the limbic system of our old mammalian brain which is involved in generating deeply religious feelings and emotions, and (3) the human neocortex, which can associate diverse elements from several sensory modalities into *symbols,* and then associate symbols and establish symbols of symbols of symbols in systematic hierarchies."[11]

He then makes the following interpretation of this view of human instincts, feelings, and thinking:

> These functions of the brain provide new grounds for understanding the reality of religion, the usefulness and validity of deep religious feelings and emotions. They give a tangible basis for the power of religion to motivate morals as well as provide hope and courage. They give a clue on how the brain may mediate to us the rare spiritual mixtures of the combined products of all three of these genetically given levels of our brain, programmed from the outside by combinations of high cultural, genetic, and environmental information, to produce in conscious self-awareness the idealistic rapture and vision of deeper reality in the mystical experience of the love of God and beatific vision. That is, they allow us to account for religious experience. It also becomes clear how such projections may reflect validly not only man's needs but also a picture of the objective reality that is sacred for him and to which he must adapt.[12]

Burhoe indicates that social motivation and altruism beyond the nuclear family cannot be produced by genetically programmed patterns of human behavior. He finds the basis for social motivation and altruism in the emergence of a "culturetype" (". . . cooperative human societies are composed of *genetically diverse members of the same species* . . . who are genetically much more diverse than cousins, but

nevertheless are programmed or *motivated to altruistic behavior* . . . by certain necessary additional *cultural* 'information' [in the technical sense, as in the 'information' in a genotype or computer])."[13]

Discussion. Burhoe's intent to root his explanation of religious phenomena in the elemental and fundamental structures of the brain becomes clear in this section. Drawing on data ordered by a particular type of evolutionary theory, he roots *instincts* in the oldest level of the brain, *feelings and emotions* in a more recently evolved level, and *symbols* in the most recently evolved level. The emergence of symbols is related to the emergence of culturetypes.

The formulation developed here is extremely compact and raises a number of questions for me. The most fundamental has to do with the relation between the brain and my awareness of a conscious center which receives diverse input from my body, including my brain. I have no doubt that my organizing center—an ultimate percipient occasion—is intimately related to my body and to my brain. However, my own experience—which must be the ultimate court of appeal in this matter—does not lead me to identify myself with my brain or my body. Sometimes I am preoccupied with my body and it influences me tremendously. Sometimes I am able to influence my body substantially. Sometimes I am preoccupied with an intellectual problem and am oblivious of my body. My wholistic experience cannot be explained adequately by appeal to genetic, cultural, or environmental phenomena.

Instincts, feelings and emotions, and symbols are clearly a part of my self-conscious experience. However, I wish Burhoe would elaborate and clarify the relation between the contribution of forms and feelings derived from the causal past (which I take to be the basis of *instinct*), novel forms of definiteness (which I take are included in *symbols*) not derived from the causal past, and their integration into an aesthetic whole which is my own experiencing.

It seems to me that the process of perception, reflection, and conception is much more complex than Burhoe's formulation suggests. He neither elaborates the means by which symbols are mediated from one creature to another (including the sequence of entities constituting the human organizing center) nor explains the basis for consciousness.

Finally, I am in substantial sympathy with the vision of the increasing complexification of creatures in the evolutionary process and in the increasing importance of symbols in the life of higher organisms. I am not persuaded that the locus of such symbolism can be centered in culture as definitively as Burhoe suggests. A transcendent locus of potentiality which has envisaged all potentiality is needed to provide a

coherent interpretation of the contrast between potentiality and actuality which humans encounter in their becoming and in their experience of symbols.

If this be so, a notion of a Divine Reality, *sui generis* in at least some senses, is required. I do not think Burhoe's attempt to "explain" the "mystical experience of the love of God and beatific vision" by instinctual, emotional, and symbolic genetically given levels of the brain and "programmed from the outside by combinations of high cultural, genetic, and environmental information" is adequate. Some "outside" ordering of reasonably relevant forms of definiteness is necessary to interpret the emergence of a creature, but the locus of this ordering is beyond cultural, genetic, and environmental information. At the same time an emerging creature must take account of its context, so data rooted in the cultural, biological, and natural world of a creature are important.

One final observation. The terms "information" and "programming" convey a flatness and aesthetic insensitivity to me. My own experience of the vivid immediacy of my specious present involves a flood of feeling and thinking aiming at aesthetic satisfaction. It may be that Burhoe's use of these terms is not meant to deny this dimension of my inner experience, but the terms frequently are associated with a mechanistic, objectivistic, and reductionist interpretation of human experience.

Religion's Role in Cultural Evolution

A Summary of the Section. Because religion is a central contributor to the transmission of values in cultural evolution, Burhoe considers religion's role in cultural evolution. He draws substantially from the understanding of Anthony F. C. Wallace, an anthropologist deeply indebted to the theoretical work of the French sociological tradition (of whom Durkheim is representative), to interpret religion.[14] Burhoe's summary of Wallace's view is stated as follows: "Religious rituals and beliefs, then, are outgrowths of very ancient roots of genetically programmed modes for ritual communications directly tied to the genetically programmed mechanisms that mediate suitable feelings and responses to provide adaptive or viable behavior relative to fellow creatures and the larger environment."[15]

Though this part of the section is titled "What Is Religion?" the discussion actually seeks to "explain" the underlying forces and factors which give rise to patterns of ritual and belief which are "a process of maximizing the quantity of organization in the matrix of perceived human experience."[16]

In the second part of the subsection entitled "Religion as Cultural

Evolution's Agent for Transforming Apes into Men" Burhoe interprets religion as the agent of cultural evolution which socializes humans and fosters altruistic behavior. The sociocultural system becomes the unit of selection in cultural evolution.[17] Making an analogy drawn from the genotypes of biology and using a mechanistic model, Burhoe sees heritable information stored

> as a "culturetype" in a "culture pool," in such coded memory patterns as rituals and languages inscribed in the neurological patterns of brains. The feedback insemination of this information—from the successful behavioral responses it produces—to shape the next generation of new "culturetypes" . . . does not require a biological generation but may even be immediate in a verbal response. Also, because culturetypes may be stored in "artifacts," the "sexual recombination" potential may sleep for fifty biological generations and come to life in contemporary culture, as in the discovery of a nonliving artifact or book of a previous culture. . . . If a culture's evolved system of information patterns does not produce viable organisms or phenotypes, then, as a "higher court of judgment," nature (the total reality involved in the system) obliterates those phenotypes and hence that culturetype, just as she obliterates inadequate DNA information in biological evolution.[18]

Human capacity for rapid response to cultural codification and transmission of information has greatly accelerated the pace of evolution in the sociocultural sphere. Burhoe believes that the information transmitted in ritual and belief is essential to shape human adaptation to its environment and its fellow humans. He suggests that the evolving systems of socially transmitted rituals and beliefs, usually called religions, have contributed to "the emergence of the conscious feelings of the self as more than a body, as a larger being with sociocultural loyalties and cosmic connections, . . ."[19]

He suggests that "the present crisis in human cultural evolution will require and will produce the emergence of a reformation of traditional religions that will unite traditional, deeply felt, emotive, pietistic, religious feelings with fully scientific 'myths' or beliefs."[20]

Discussion. This section focuses on the factors in the causal past allegedly giving rise to religion and on the functions it allegedly plays in human life.

As noted, the first part of the section is titled "What Is Religion?" but it focuses on the structure of the brain permitting the emergence of patterns of ritual and belief and on the functions religion allegedly has in human life.

I myself do not think religion is defined adequately by characterizing these structures and functions. It is one thing to note the factors which are associated with the human organizing center and its relations to its fellow creatures and its environment. It is quite another to

assume that this structure and these relations account adequately for the emergence and persistence of religion among humankind. Since Burhoe (and the anthropological tradition from which he draws in this section) rejects the idea of a *sui generis* or partly *sui generis* Divine Reality as the ground for religious experience, he must turn to the biological and cultural spheres to "explain" its origin.

The second part of this section focuses on the emergence of social cultural systems. The long quotation cited from this part illustrates the mechanistic and materialistic perspective informing Burhoe's constructive interpretation. I do not know what "such coded memory patterns as rituals and languages inscribed in the neurological patterns of brains" means. The idea that the experiences of the past are "inscribed in the neurological patterns of brains" relocates the locus of memory, but it does not provide an explanation for the way in which the vivid immediacy of past "presents" can be appropriated in an emerging present. Even if the sequence of events constituting the experiences of the past are "located" in various parts of the brain and reproduced serially by the creatures constituting those parts, the events must be mediated to the ultimate percipient occasion "remembering" its past. I do wish Burhoe would illumine this process. I suspect that the idea of enduring substances which retain these experiences is inherent in Burhoe's formulation. In any case, I think this discussion needs expansion and clarification. I think an adequate explanation of memory requires the elaboration of an interpretative framework appealing to the canalization of living experiences, the objectification and everlasting retention of these experiences in the Divine Life, and the mediation of these experiences to the emerging percipient occasion through the common participation of past and emerging creatures in the same forms of definiteness.

In the long citation just referred to, Burhoe identifies nature as the total reality involved in the system. Nature "obliterates" those culturetypes not producing viable organisms or phenotypes. I wish this notion of "the total reality involved in the system" was explicated more fully. (Burhoe's deification of nature implicit in this formulation becomes explicit later in the paper.) I also find the notion of "obliteration" harsh and ultimately unsatisfying. If this be all one can say about the creatures that have become, Burhoe is saying nature ultimately gives its beloved sleep—and nothing more.

The Evolution of Scientific Theology

A Summary of the Section. Burhoe posits four broad stages of religious evolution: primitive ritual, primitive beliefs or myths, theology, and scientific theology. Theology emerged out of primitive beliefs or

myths some one to three thousand years ago, and scientific theology emerged in recent decades.[21] He holds that "Christian theology was a high step toward converting primitive or 'mythical' explanations of religious ritual into the sophisticated, rational, scholastic 'myths' of Greek philosophy."[22]

Burhoe traces the breakdown in classical Christianity precipitated by the emergence of science sometime after 1500. In this discussion he appeals to an analogy provided by some terms in contemporary computer analysis. It is quoted here in its entirety because it illumines Burhoe's basic vision of the relation of the biological, cognitive, and social dimensions of human experience:

> For understanding the relation between religion and other elements of culture and the relation of these to the more slowly changing information that shapes our biological nature, it may be helpful to use an analogy nicely provided by some terms common in contemporary computer technology, where "hardware" denotes the electronic and material machinery and "software" denotes the special linguistic or logical rules that program the machinery with information that makes it useful for human purposes. Before each new job, the software is fed into the machinery by information on punched cards or magnetic tape as the machine's program. The machine "reads" this program or incorporates it so that it becomes a part of itself. In analogy we may say that culturally formulated or evolved religious information became the basic motivational software of the hominid *Homo sapiens,* to program this "ape" to become the human nature we know. The hardware in religion is the fixed, genetically programmed motivational mechanisms of the lower brain centers to which religiously evolved ritual behaviors and beliefs tied the new, culturally transmitted information about self, society, duty, and hope. The special hardware to "read" programs from cultural software is the brain's neocortex. It is this new, cultural, socially transmitted level of information or software that provides the characteristic human patterns of feeling and logic in conscious choice making. In several thousands of years of evolution the hardware of the human gene pool has changed little. It is the software (or belief systems) that has evolved increasingly rapidly and has become for all practical purposes the program that motivates (so long as it remains cathected to the hardware) man's sociocultural behavior.[23]

In this discussion Burhoe affirms the importance of convincing beliefs for human behavior, notes the personal and social disorganization entailed by the decline in the "convinceability" of traditional Christian beliefs in the West, and then points to the coming of scientific theology. It is here he sees the possibility of the emergence of new, credible beliefs which will enhance social altruism.

He does not discuss in detail the way in which reason, feeling, and ecstasy are related, but he does indicate reason fails to elicit feeling when it "becomes confused by conflicting reasons."[24] He expresses a strong conviction that modern science offers a way to human salva-

tion. The following quotation illumines the substance and force of Burhoe's conviction:

> The new religious and theological language will be as high above that of five centuries ago as contemporary cosmology is above the Ptolemaic, as contemporary medicine, agriculture, communications, and transportation concepts are above those of the fifteenth century.
>
> Modern science is the new revelation about human nature and the world that is universally credible and compelling for most men today, as already shown by the spread of scientific medicine and other scientific technologies to all cultures of the world. When it becomes successfully integrated with religious traditions, scientific understanding will tend to pull them more closely together, as it has pulled the world's varied medical beliefs and practices together into a more universal system. At the same time, the scientific theologies will find genuine virtues and validities in each of the great religious traditions and will adapt themselves to each local culture, as scientifically based medicine or agriculture has adapted to the local situation's particularities without losing its universality.[25]

His extraordinarily high view of the morality of the scientist is reflected in this observation: "One need not fear any domination by scientists, as one now may properly fear domination by one or another political dictator, for science is the element of human cultural evolution that has learned most deeply to understand that the evolution of valid knowledge is not be be entrusted to any individual human wish, prejudice, or person."[26]

One of the reasons for Burhoe's faith in science is "its insistence on getting a truth-value judgment from *the external reality system itself,* no matter how plausible or well confirmed a new hypothesis or statement might be within the rational scheme of the scientists making it."[27] Burhoe discerns a split between human-value culture which provides *meaning* and the scientific culture which provides *truth.*[28] Burhoe seeks to overcome this bifurcation by deifying nature. The following quotation illustrates this deification:

> In Christian theology the symbol of the ultimate and true reality which created man, shaped and shapes his destiny, and provides meaning, purpose, hope, and direction for human life is the term "God." Central in religions generally are such symbols for the ultimate source and context of human life. In a world that has been converted to a very different world view from that of Plato and Aristotle, the effectiveness of this "God" symbol requires its credible translation into the new world view. In the new scientific world view, the "reality" which possesses very similar attributes is called "nature." In the sciences, "nature" has come to denote the total reality system, including the laws or ways in which it operates in time, the dynamic history of its sources as far as they can be traced in time and space, and hypothetical entities or

constructs that may not be directly observable but on the basis of which what is observable logically follows. . . . The scientific picture tells us how the often inexplicable or seemingly irrational world of our commonsense experience is the natural and rational product of a long history or cosmic evolution of a system of hitherto hidden or unknown particles and forces, portrayed in different aspects by various sciences and yet all essentially integrated around a common, universal, everlasting, all-determining "ultimate reality system."[29]

He then completes the deification of nature: "To the extent that there could be shown to be an equivalence between what is denoted by the theological term 'God' and this scientific term 'nature,' to that extent we could say that scientists are engaged in the attempt to talk about God and hence are doing theology. But I would guess that in the last fifty years more than nine hundred out of a thousand people I have known in the sciences and in theology do not see any relation remotely approaching identity between 'nature' and 'God.' "[30]

Discussion. In the early portion of this exceedingly important discussion Burhoe delineates four stages of religious evolution: primitive ritual, primitive beliefs or myths, theology, and scientific theology.

It is striking to me that the dimension of feeling or emotion is not explicit in this categorization of religious evolution. If feeling and patterns of religious behavior are reciprocally and dynamically interrelated—as I think they are—then somewhat different stages of religious evolution are needed. I would see religious ritual and religious emotion as emerging very early in human religious evolution.

I am also uneasy about Burhoe's understanding of "primitive beliefs or myths." I think it might be useful to elaborate the bases for my uneasiness, for it will illumine facets of the contrasting "grounding intuitions" informing Burhoe's work and my critique of it.

I think that religious experience is grounded in the human intuition of a Divine lure for harmony and intensity of feeling. The Divine subjective aim evokes novelty and seeks to enhance the aesthetic satisfaction in the creatures of the world. The Divine subjective aim primordially envisaged all potentiality and orders it to provide fitting forms of definiteness for emerging creatures. These forms of definiteness are not a class; rather, they are a multiplicity, all of them having one thing in common—their envisagement by the Divine subjective aim. Because of the transrational (not irrational) character of this envisagement, there are no self-evident first principles which the philosophical theologian may employ to "prove" the existence of the Divine or to use as clear and self-evident basic premises to elaborate a metaphysic. Human faith in rationalism—that there is a relational matrix to the universe whose essence reason seeks to penetrate—is

sustained by this transrational experience. Thus faith in rationalism shades off into religious experience and is sustained by religious experience.

It follows that "myth" is richer for me than for Burhoe, who uses the epithet "primitive" to describe myth. Myth points toward human experience of the transrational "power" of God's subjective aim at the base of potentiality. To be sure, "myth" has been, is now, and will be identified with particular "beliefs"; such "primitive" reification of myth must be resisted if its capacity for evocation of the Divine Presence in human life is to be sustained. Nonetheless, its evocative power is perennial and is not to be identified with the primitive.

Humans do seek cognitive explanations of what they feel and do, so the emergence of religious beliefs to interpret religious feeling and religious ritual is universal and perennial among humans. The term "primitive" may be used to refer to religious beliefs which are relatively uncoordinated and incoherent. Such beliefs may be contrasted with the more coherent and logical systems of thought evolved by theologians seeking to provide a rational interpretation of the religious emotions, rituals, and beliefs which they inherit.

In sum, I would also see an emergence of religious beliefs, but I would characterize them differently from the way Burhoe does. The emergent sequence is ritual, emotion, beliefs, and rational interpretation. The relation between these components is dynamic and reciprocal.

Burhoe's "theology" and "scientific theology" are both forms of rational interpretation. As subsequent discussion will make clear, I am dubious about the prospects for a "scientific" theology of the type Burhoe proposes. I do think an adequate theology must "fit the facts," but I am not as certain as Burhoe is that one can evolve a "science" independent of metaphysics. The relation between philosophic propositions and propositions applying to the subject matter of the various sciences is subtle and complex, and the "facts" which the various sciences consider are subject to a variety of fundamental interpretations.

Burhoe's discussion of the relation between the biological, cognitive, and social dimensions of human experience elaborates the perspective cited earlier. It is interesting that he begins his discussion with a reference to contemporary computer technology and draws an analogy to human experience. Since one begins one's reflection with human experience, I would have thought one employing an analogical method would want to have begun with that experience and see how far analogies in the other direction would be fitting, rather than vice versa.

I cite this passage and note Burhoe's use of the analogical method to illumine the mechanistic, deterministic, and materialistic base of his thinking. I strongly suspect that the "metaphysics" implicit in his view of science has its roots in a Newtonian world view. (This issue will be raised again later in my remarks on his conception of the nature of time and space.) For Burhoe, "mind" is dependent on "matter," located either in the body, in culture, in society, or in nature.

The internal and social disharmony occasioned in the personality and in society by the absence of convincing beliefs which Burhoe suggests is persuasive. Personal integrity or wholeness—insofar as it can be attained under the conditions of existence—does require a substantial measure of coherence among feeling, thinking, and acting. It seems to me that the lure evoking this desire is rooted in the ordering of the forms of definiteness in God's primordial nature. In this way the quests for the "truth" in science and in philosophy, for the beautiful in art, and for the good in ethics are evoked by foundational religious intuition and experience.

The path to the renewal of the meaning evoking power of religious symbolism does not lie, it seems to me, in the direction of an emerging scientific theology. Rather, it lies in the direction of reinterpretation of foundational religious intuition and experience evoking religious symbols such that persons can affirm with integrity the authenticity of a Divine Reality which is in some senses *sui generis.*

Burhoe's faith in modern science and human scientists is put forcefully and eloquently in this section. Without derogating either facets of the scientific method or the moral character of scientists, I would suggest this faith is excessive.

Burhoe deifies nature in a way comparable with the way Durkheim deified society. This quoted section provides some clues about his view of this ultimate reality system and about aspects of some implicit philosophic notions embodied in his thinking.

He observes that the term "nature" is used in the sciences "to denote the total reality system, including the laws or ways in which it operates in time, the dynamic history of its sources as far as they can be traced in time and space, and hypothetical entities or constructs that may not be directly observable but on the basis of which what is observable logically follows."

Note the phrases "in time" and "in time and space" included in this characterization of the total reality system. Is time something which flows and in which bits of mind and matter persist? Is space something which extends evenly in all directions? Is time measured by motion or is motion measured by time? Is there a becoming of continuity or a continuity of becoming? In other words, is a Newtonian or a

Platonic view of space and time being advanced? Alternatively, does Burhoe want to opt for P. W. Bridgman's operational definitions of space and time or an Einsteinian-Kantian view?

Note the phrase "integrated around a common, universal, everlasting, all-determining 'ultimate reality system.' " Does the "ultimate reality system" incorporate the differentiated and singular as well as the common? What is the understanding of the particular and what is its relation to the universal? What is the relation of the temporal and the eternal to the everlasting? Is any entity "all-determining?"

Note the phrase "hypothetical entities or constructs that may not be directly observable but on the basis of which what is observable logically follows." Are these entities merely hypothetical or constructs or are the forms to which they relate also embodied in creatures observed in nature? What is involved in the process of direct observation? What is the meaning of "logic" in this context?

I raise these questions to point to philosophic assumptions I think are implicit in this formulation of nature. I think these issues are perennial in human experience and cannot be resolved by appeal to work in one or several of the specialized sciences. One cannot avoid metaphysical questions by appealing to the authority of science.

In the specialized natural sciences one customarily thinks by a method of difference and the use of the experiment. The effects of various phenomena are assessed by comparing specified characteristics of other phenomena in the light of the presence or absence of the former phenomena on the observed phenomenon. The experimental method collapses when one is seeking to discern those factors and structures always present in human experience. In metaphysics one may use an experiential method, but one cannot use an experimental method. By employing a negative judgment, one may consider imaginatively the absence of that which is always present in experience. In such a manner one may envisage the factors and structures which are always present and evolve a set of metaphysical propositions.

Thus both the specialized sciences and metaphysics share a common concern with testing the results of one's propositions; both are concerned with the truth. From my point of view *the* truth is nothing else but the way in which the creatures of the world are objectified in the Divine Life. Our more limited truths are selective abstractions from this objective truth. Metaphysical propositions are more general and universal than the propositions applying to specific subject matters, but they must not be inconsistent with those more specialized propositions.

My final observation has to do with Burhoe's view of the morality of

the scientist. While there are highly "moral" scientists, finitude, ignorance, sloth, lethargy, and inordinate self-interest are very pervasive among humankind. I do not believe scientists are immune from the jealousies, squabbles, self-seeking, or power conflicts so common among us. I myself would be and am concerned about domination by scientists.

I concur with Burhoe's observations about the checks and balances inherent in the scientific enterprise. Nonetheless, although scientists may prize rationality within their own spheres of endeavor, they often are dogmatically irrational outside their own spheres and not infrequently resist revisions in the basic modes of thought within their own sphere of specialization.

What Is Man's Freedom?

A Summary of the Section. In this section Burhoe advances the notion that natural selection is a nonrandom or determined process. He sees the process of increasing complexification exhibited in the evolutionary process as a nonrandom or determined process working by means of random variations given by another layer of nature.

He struggles with the ancient problem of predestination and human freedom, translated into the framework of his "scientific theology." He puts his formulation of the question in this manner:

> In general, I would say that the new scientific pictures of man's creation by natural selection again allow for the restoration of the validity of a god concept as a reality which maintains perpetually a concern for what is going on in the cosmos, even a complete control of the process. This concept of "complete control" or "scientific determinism" is another stumbling block with which theologians themselves have been struggling since long before modern science began. How can one speak of "God" as designating that which controls everything and yet allows man freedom to make choices and be responsible for his choices?[31]

He subsequently puts the relation of humans to nature (God) in this manner: "With the scientific picture of an omnipotent and sovereign environment within which man is a small and completely dependent incident, we come into a problem of human motivation found by earlier theologies depicting a sovereign God's foreordination or predestination of man."[32]

He then formulates a proper view of freedom, freedom interpreted as understanding the forces and factors making one so that one can live in conformity to them: "We can properly say that freedom (whether as capacity to maintain life's present patterns or to search for potentially better patterns) has been and is determined by inputs

from man's environment. Instead of requiring freedom from determinism, man's responsibility or duty to carry out goals or values turns out to be completely dependent upon it. Duty to some goal is determined by having been inscribed in the "heart" (central nervous system) of man by the larger environment."[33]

He then summarizes what he considers to be the current scientific picture:

> From the present scientific pictures of *Homo sapiens,* it could be said that man's freedom from the disordering elements of his environment is an ordered (determined) cybernetic or homeostatic system that provides that freedom; that this system itself has been determined by natural selection; and that nature's evolving systems insist upon or determine that he continue an open or free search for ever higher adaptive levels. Man's freedoms constrain him to compete in an everlasting program to maintain and extend the ever-expanding hierarchical levels of dynamic patterns of stratified stability (or of dynamic homeostasis) of the open-ended flow patterns of dissipative energy that we know as life. From this task or ordination, established and continued for billions of years by the specific parameters of cosmic processes on earth, man has no possibility of escaping. *Man has no freedom to do other than adapt to what this "nature" requires—except to cease to be.* As ancient theologians have said, to be a slave of the true God is man's greatest freedom. That is, to cherish and ever to seek better adaptations to the cosmically given or determined patterns of how to live and to evolve is the way unto life. But in this process man has far more of the first kind of freedom (the freedom to maintain life's dynamic patterns against myriads of disruptive interventions) than any other creature on earth. He has infinities of the second kind of freedom (the freedom to search and find better patterns of life).[34]

The way Burhoe seeks to translate theological symbols into scientific ones is illustrated in this passage: "When thus properly translated or interpreted, not only our traditional Western religious species but all the great religions can again become more effective in enculturating in the 'brain pool' of mankind an integrated and unifying perception of the self as larger than the 'natural' or commonsense self of the body, a new being that integrates not merely with the immediately ambient sociocultural system but ultimately with the species and with the ultimate reality system called 'nature,' the 'natural system,' or 'the way things are' in the sciences and called God or the Kingdom of God in Christian theology."[35]

The contrast between human genetic and cultural systems gives rise to the "isness-oughtness" contrast embodied in human experience. Man's social freedom "depends on the state of mutual adaptation of two essentially different units, both resident in his central nervous system but only one of which is resident in his genotype. . . . The mismatches between the programs of sociocultural systems and an

individual's biological drives have caused the problem of evil and original sin to exercise mythmakers and theologians from the beginning, undoubtedly, of human culture."[36]

Burhoe concludes this section by locating fully human freedom in the recognition of the good or right in three separate systems:

> (1) his organism, (2) his society, and (3) the total ecosystem which is ultimately the creator and sustainer of his society as well as of his individual nature. If his attitude and behavior are correctly informed concerning what to do with respect to the two superior, transcendent realities which enable his organism to *be* or to have life, then he will have the first freedom or power for maintaining life and also the second freedom or power for participating in the creation of new and better life. . . . The new scientific pictures can revitalize this ancient religious wisdom by showing better than ever its essential validity or truth. Briefly, man's greatest freedom comes from his proper service to his society and God; man's freedom is a heritage or gift ordained or fully determined by the reality system that produced us.[37]

Discussion. Burhoe's view of the relation between his "Lord of History" (nature) and the classical Christian view of the Divine is intriguing. Instead of going "up" to seek a deterministic explanation of things, Burhoe goes "down" or "out." He views nature as having "complete" control of the process of emergent evolution. His sharpest formulation is in the quoted passage beginning "with the scientific picture of an omnipotent and sovereign environment within which man is a small and *completely dependent incident*" (italics added).

It seems to me that the broad view of the increasing complexification of creatures and hierarchies of creatures in the evolutionary process is very persuasive. Whether it need be interpreted in the deterministic manner Burhoe suggests is moot and is rooted in a world view not directly derived from "the scientific picture" (certainly not the scientific picture of humanistic psychology or *verstehen* sociology).

I do not think humans are a "completely dependent incident." It seems to me that all emerging creatures appropriate aspects of the creatures that have become and contribute something to all creatures in their causal future. This universalization of the principle of relativity means no creature is merely dependent. Every creature receives data from its environment (including an authentic and partially *sui generis* Divine Presence) and synthesizes it in private. Thus freedom and determination are characteristics of every creature. Life is a bid for freedom from the bonds of the causal past, and high-grade organisms are not bound by their "environment" as they decide what they are to be.

This capacity for some novelty of response extends to all creatures,

though it is minimal in the case of inorganic entities. It follows that laws are immanental, coming into existence as creatures and societies of creatures appropriate and reproduce particular forms of definiteness and passing out as new societies emerge. This desire to share common defining characteristics is enhanced by the Divine lure for harmony and intensity of feeling.

The element of novelty inherent in life means that no one —including the Divine—foreordains what is to happen. The universality of the category of freedom and determination means that God (or nature) is limited by the freedom of creatures to "decide" what they are to be. It also means that the laws of nature are limited by the shifting, defining characteristics appropriated by creatures and societies of creatures.

I am in substantial sympathy with Burhoe's intent to relate humans to other humans and to lift up a concern for the whole, but I am not persuaded that the deification of nature is the way to do so.

I have great difficulty with Burhoe's interpretation of the "isness-oughtness" contrast in human experience. I affirm the experience of a contrast between a very substantial harmony in some of the sequence of events constituting my person and the disharmony experienced in other of the events constituting my person, but I think the contrast is rooted in something more fundamental than the contrast between individual biological drives and the programs of sociocultural systems. It is grounded in the contrast between one's experience of the perfection of God's subjective aim which orders and harmonizes the forms of definiteness and limits on this perfection caused by finitude, ignorance, sloth, lethargy, and inordinate self-interest.

I respond very positively to the quote concluding the summary of this section—provided the meaning of "total ecosystem" can be reformulated to include an authentic Divine Reality in part transcending the ecosystem, and the category of freedom and determination can be universalized to apply to all creatures, including the Divine creature.

Man's Capacity to Sacrifice His Present for His Future Self

A Summary of the Section. In this section Burhoe affirms that humans gladly have, can, and must deny present satisfactions for the sake of future generations. Burhoe notes that the "natural history of all organisms shows that self-sacrifice for the larger whole of which it is a part is the order of the day."[38] He also sees the emergence of death and sex as the ways in which the "Lord of History" enhanced the evolutionary process.

In an oblique reference to the question of immortality Burhoe notes that human somatic death is genetically prescribed. He speaks disparagingly of "otherwise sound biologists, who are not really clear about this, perhaps because so great is their misconceived desire for the infinite continuation of the individual body that the truth of the essential goodness or virtue of somatic and genotypic death is not acceptable to them."[39] For Burhoe, the ecosystem of advancing forms of life provides the basis for altruism and self-sacrifice.

Discussion. The attainment of the proper balance between the realization of present satisfaction and the anticipation of future satisfactions is a salient moral problem. Similarly, the balance between proper individuation and concern for the community is a persistent problem. Burhoe affirms very strongly the propriety of concern for the future and for the community.

There is obviously much merit in this emphasis from many perspectives. I would make only two observations. First, there must be some satisfaction in the present, for, although the future is real in the present, it is not actual. Further, sometimes novelty and aesthetic satisfaction are enhanced if one is a bit oblivious of the future. Second, in order to actualize oneself, one must be separated from the community. Burhoe has given us little guidance to help us discern legitimate from tyrannical community interests and to sustain proper individuation from the whole.

I cannot resolve the problem of death as easily as Burhoe does. For me, the ultimate evil is loss—the vivid immediacy of the present is perpetually perishing. The attempt to resolve this problem by appealing to human contributions to the biological and cultural future is not satisfying, for, ultimately, these creatures also shall pass away. I think something more is needed than biological and cultural immortality to deal with this haunting problem.

Two other possibilities suggest themselves. One is the everlasting retention of the creatures that have become in the Divine Life. The other is the persistence of the "soul" after the demise of the organism with which, currently, it is associated intimately. I do not see how Burhoe's formulations permit him to envisage either of these possibilities.

The former possibility requires an interpretative schematism positing mutual interaction and reciprocity between creatures and God who is in some senses *sui generis* and in some senses dependent on the world and who can retain everlastingly and without loss all that the world has to offer. The latter possibility requires the notion of an intense mutual immanence between God and the soul and an interpretative framework allowing the possibility of further evolutionary

states and a multiplicity of layers or levels of experience such that the existence of entities not so dependent on an organic and inorganic substructure may emerge and be sustained. Burhoe provides no house for such hope.

Natural Selection and Human Salvation

A Summary of the Section. Burhoe introduces his discussion by reaffirming his faith in "scientific theology." He believes modern physics is in process of replacing "metaphysics" (undefined in this section) and "supernatural," which Burhoe translates to mean a "scientific picture of human destiny as completely determined by forces entirely beyond man's control, quite superhuman."[40]

He reaffirms and elaborates his confidence in the future viability of religion, understood as the transmitter of human value-culture and "the sociocultural cumulated wisdom for salvation."[41] In the current epoch Burhoe locates religious propagation in the popular arts and in the humanism of the secular universities. He summarizes his understanding of nature, the true "Lord of History," in this section:

> If we understand the "nature" described by the sciences as the system of laws, according to which events in the history or evolution of the underlying reality system proceed in time, which, together with the given or "initial conditions" and the "hidden relations" or "preferred configurations" of the reality system, explain (as far as man can explain it) the varied history or evolution of the universe and the living systems (including human minds and societies) in it, then we do have a concept akin to the ultimate reality or God of the high religions. It possesses the aseity (absolute self-sufficiency), omnipotence, and other traditional attributes of God that make it natural to speak of a "Lord of History."[42]

The new religious virtuosos, those who genuinely understand the true Lord of History, are the bearers of scientific theology. They are to enculturate the information necessary to maintain life. Burhoe elaborates the elitist view of these religious virtuosos:

> For enculturation in human societies—with all their diverse levels of ages, education, and genetic endowments—it requires continuing reinforcement programs from the most elementary rituals through the most sophisticated scientific theology. It should be carefully noted that a scientific theology is no more and no less necessary for a population that would live in the "kingdom of heaven" (symbol for ultimate reality for life) than is the science of a medical technology for a population that would be healthy. Only a few persons in ten thousand need to be consciously aware of the full scientific details involved in certain medical inoculations; but without them health for millions would be impossible. The same is true for effective religion in the modern world.[43]

Discussion. The impossibility of substituting the theories of a special science for metaphysics was discussed earlier and will not be elaborated further here, but it is necessary to comment on Burhoe's view of the new religious virtuosos—the bearers of scientific theology.

Since there are alternative ways of abstracting from and interpreting the drops of human experience, it seems most unlikely that humankind will attain a consensus on foundational interpretations of religious experience in the foreseeable future. Burhoe has rejected those philosophic and theological traditions that think it is necessary to interpret religious experience as a response to a Divine reality which is in some sense *sui generis* and has chosen to deify nature.

In so doing he has rejected the Aristotelian and Platonic philosophic traditions and almost all forms of Christian theology. He may have rejected metaphysics formally, but he has grounded his views in propositions reminiscent of Democritus, Newton, and/or the Sophists. It is not possible to be definitive on this grounding, for Burhoe's own formulations are not explicitly related to historical thinkers. I am here referring to the primacy of nature and the epiphenomenal character of consciousness associated with the atomistic tradition, the notions of space, time, matter, and minds posited by Newton, and the operationalism (construction of concepts and theories) associated with the Sophists.

I would shudder at the thought of inculcating his view of scientific theology in the educational system, just as I would shudder at the thought of inculcating any other particular interpretation of human religious experience in the educational system. The reinforcement program he suggests I find equally distasteful. This proposal smacks of manipulation and violates the human quest for freedom and integrity.

I do not think nontheistic interpretations of religions can sustain the human spirit or elicit some measure of social altruism in the longer run.

In any event, people must continue to explore both ancient and contemporary interpretations of human religious experience and to affirm perspectives which they can affirm with intellectual and emotional integrity. Some may find the sort of scientific theology Burhoe elaborates in this essay to be logical, coherent, applicable, and adequate to the complexity of human religious experience, but others will find other perspectives more adequate. I would hope that educational and religious institutions will continue to seek to sustain at least a limited pluralism of styles of religious rituals, feelings, beliefs, and interpretations.

A Concluding Note

The issues Burhoe has raised in his essay are perennial. My own questions and critiques, rooted in the Platonic tradition and in the perspective of process philosophy, illustrate how a proponent of another tradition, familiar with at least the broad contours of modern science, reacts to the formulations Burhoe has advanced.

In a basic sense our disagreement centers on the status of metaphysics. I do not think it is possible to eliminate metaphysics, for every approach to human understanding embodies first principles and makes assumptions not resolvable by any simple appeal to the facts. In this sense I would say Burhoe employs an implicit metaphysics in his analysis.

I have tried to illumine some of its elements by raising critical questions about it and the interpretations of religion emerging from it.

It has not been possible in the context of the space available to elaborate an alternative interpretation, but the critique I have advanced is grounded in an alternative, foundational vision of the nature of things—one which refuses to deify nature and which affirms the reality of a Divine entity that is both immanent in and transcendent of the world. This Divine reality is qualifiedly *sui generis* and is the locus of potentiality, the lure for feeling, the mediator of experience from one creature to another, and the ultimate receptor of all that has become.

NOTES

1. Ralph Wendell Burhoe, "The Human Prospect and the 'Lord of History,' " *Zygon* 10 (1975): 301.
2. Ibid.
3. Ibid., p. 302.
4. Ibid.
5. Ibid., p. 303.
6. Ibid.
7. Ibid.
8. Ibid., p. 304.
9. Ibid.
10. Ibid.
11. Ibid., p. 306.
12. Ibid.
13. Ibid., p. 310.
14. A. F. C. Wallace, *Religion: An Anthropological View* (New York: Random House, 1966). Émile Durkheim's classic work is *The Elementary Forms of the Religious Life,* trans. Joseph Swain (London: G. Allen & Unwin, 1915). For an extended analysis and critique of Durkheim which elaborates some of the critical observations developed later in this paper, see "Émile Durkheim's Ordering of the Sciences: A Résumé and a Critique," in

my *Cognitive Structures and Religious Research* (East Lansing: Michigan State University Press, 1970).

15. Burhoe, p. 312.

16. Ibid., p. 313. The quote is a quotation drawn from Wallace.

17. Although Burhoe does not cite Talcott Parsons in this discussion, it seems to me he is drawing on notions which Parsons helped develop and popularize (see, e.g., Talcott Parsons, *The Social System* [Glencoe, Ill.: Free Press, 1951]). In Parsons's later work he became very interested in sociocultural evolution. Again, this line of thinking was initiated in the later part of the nineteenth century in both England and France. Durkheim, Morgan, and others elaborated ideas comparable with those Burhoe develops here.

18. Burhoe, pp. 313–14. This quotation illumines Burhoe's deification of nature and his use of a mechanistic model.

19. Ibid., p. 316.

20. Ibid., p. 317. Burhoe does not indicate what he means by "fully scientific" in this context. He does say: ". . . for those exposed to scientific beliefs, the scientific extension of previous myths and theologies would be as essential to aesthetic and motivational religion of the twenty-first century as were the informational patterns of the DNA necessary for the evolution of cells and organisms. It also seems to me that such an interpretation of religion in terms of modern natural philosophy or science is as necessary and as big a step in the advancement of religion as was the synthesis of Platonic and Aristotelian philosophy with religion in the preparation for Western civilization as successor to the classic Mediterranean civilization." The global quality of this characterization should be noted. From many points of view, modern natural philsophy or science is extremely complex and variegated and more closely related to alternative traditional philosophic schemata than Burhoe's characterization would suggest. Similarly, the synthesis of Plato and Christianity that Augustine undertook differs substantially from the synthesis of Aristotle and Christianity that Aquinas undertook. The alternative understandings of the relation of human forms of understanding to the order of nature exhibited by Einstein and Whitehead, two of the greatest philosophers of nature of the modern epoch, may suggest to some the extraordinarily subtle and complex relations between scientific formulations, philosophic perspectives, and religious understanding. P. W. Bridgman's operationalism illustrates an approach coherent with a Sophistic perspective. The question, "Which modern natural philosophy will be most widely appropriated in the twenty-first century to interpret religious experience?" seems to me to be the crucial one. As the critical portion of this essay suggests, I have grave doubts about the adequacy of the mechanistic-materialistic mode Burhoe uses in his paper to interpret religious experience and to sustain the human spirit.

21. Ibid., p. 319. The parallel between Burhoe's vision and that of Comte is striking (see Auguste Comte, *Positive Philosophy* [New York: Appleton, 1853]). Similarly, the outline Burhoe suggests is strikingly similar to that of Durkheim. (See, e.g., the last chapter of *Elementary Forms of the Religious Life.*) Wallace, whose work Burhoe cites with approval in several parts of his paper, is probably the figure linking Burhoe to this tradition.

22. Burhoe, p. 321. In his discussion in this section Burhoe notes the influence of Plato and Aristotle on Christian theology. Interestingly, he does not note the influence of the Greek atomists and Sophists. It seems to me that a synthesis of these two heritages is reflected in Burhoe's own constructive efforts. The materialism of the atomists is combined with the interactionalism, operationalism, and antimetaphysical outlook of the Sophists to produce a "scientific theology."

23. Ibid., pp. 321–22. The term "cathected" may relate Burhoe to the Freudian heritage, but he does not elaborate his usage of the term here.

24. Ibid., p. 326.

25. Ibid., p. 328.

26. Ibid.

27. Ibid.

28. Ibid., p. 329. In recent Western history this distinction is grounded in the bifur-

cation between theoretic reason and practical reason. Burhoe does not explore this tradition and its Kantian roots in this paper.

29. Ibid., p. 330. Note the implicit Newtonian view of time as that which flows and of space as that which extends evenly in all directions in the passage ". . . including the laws or ways in which it operates *in time,* the dynamic history of its sources as far as they can be traced *in time and space, . . .*" (italics added). In spite of his strong interest in evolution, Burhoe does not cite such evolutionary thinkers as Henri Bergson, S. Alexander, Whitehead, Charles Hartshorne, or Teilhard de Chardin. Significantly, none of these thinkers deified nature.
30. Ibid.
31. Ibid., p. 335.
32. Ibid., p. 336.
33. Ibid., p. 338.
34. Ibid., pp. 338–39.
35. Ibid., p. 342.
36. Ibid., p. 345.
37. Ibid., p. 346.
38. Ibid., p. 347.
39. Ibid., p. 347–48.
40. Ibid., p. 352.
41. Ibid., p. 357.
42. Ibid., p. 361.
43. Ibid., p. 367.