

## RELIGION'S ROLE IN THE CONTEXT OF GENETIC AND CULTURAL EVOLUTION—CAMPBELL'S HYPOTHESES AND SOME EVALUATIVE RESPONSES

### INTRODUCTION

*by Ralph Wendell Burhoe*

Increase of knowledge without wisdom has been a central hazard in human evolution, increasingly afflicting man from the moment his primate brain began to expand and give him too big a head for easy passage from his maternal environment. Hudson Hoagland—a significant worker in developing our understanding of the brain and a man passionately concerned with overall human welfare—wryly suggested, when reflecting upon some of the disastrous, possible consequences of the brain's ingenuity that enabled us to develop the atomic bomb, that the evolutionary expansion of the mass of the brain might possibly prove to be a lethal tumor.<sup>1</sup>

Ancient warnings of the dangers of technology and science without wisdom are presented in two stories. First is the fable of the sorcerer's apprentice whose ignorance of how to shut off the machine that produced a good made the technology disastrous when too much of the good became a tragic evil. Second is the biblical story of the Lord's warning to man that death might be the consequence of his eating of

[*Zygon*, vol. 11, no. 3 (September 1976).]

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the fruit of the central tree in the garden of Eden, the tree of the knowledge of good and evil. The clever snake persuaded Eve that eating of this fruit would open our eyes so that we should be as gods, knowing good and evil. And, ever since, we have been eating this fruit and suffering the consequences.

These myths express a truth about knowledge that has a very wide application. As a matter of fact, our present understanding of the evolution of life as a whole from its very beginnings is the story of the increase of information or organized structures to shape energy flows to constitute stable dynamic patterns called living systems. The information or structural boundary conditions have been continuously edited, weeded, or selected to provide wisdom for life. We now understand something of how the genetic code—the DNA-coded information or boundary conditions central in every cell of every organism—is a cumulation of a symbolic memory of viable patterns of life discovered or evolved over the past billion years. We know it to be a library of information that provides the know-how to structure available disorderly flows of matter-energy into ordered and enduring patterns of life. We know something of how it has been selected and transmitted. We are familiar with the fact that its elaboration to generate more adapted and complex life patterns requires variation or mutation of the DNA code. We know that this variation is brought about by chance and that most of the new patterns are failures or lethal. But, at the same time, we know that natural selection, the survival of those that fit, has ever been weeding out the erroneous or unwise or unadapted patterns. This leaves in the gene pools of the species of the earth those rare collections of adapted information for patterns of living that are the treasured collections of millions of years of the creation process.

#### CULTURAL EVOLUTION?

That is the story of the evolution of our genetic knowledge or wisdom. Now we must ask, Is there really anything new in the evolution of human knowledge in the human brain that is essentially different from the information in our genes?

The late, great geneticist, Theodosius Dobzhansky, was, as readers of *Zygon* and of his other writings know, among those who significantly developed our understanding that in human evolution “cultures” emerged as a new system for accumulating and transmitting information on what is good and evil for life.<sup>2</sup> Culture is quite different from the more ancient genetic ways of learning and remembering what is good for life, and it has made man different from all other creatures on earth. Men have long been aware of culturally

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transmitted information and only in the past century have come to know about the genetically accumulated information and how it is selected and transmitted. And we still do not have any clear and widely accepted pictures of how the two kinds of evolution are related.

Dobzhansky was quite clear that human values, ethics, and religion were a part of cultural evolution; and his observations and insights on the origins of religion joined those of colleagues in anthropology and religion who sensed the generation of religion from the impact of the dawning awareness of the certainty of one's own death, and the threat of this new knowledge to one's sense of purpose and meaning, unless and until it was supplemented by still other new knowledge that could restore a sense of meaning and long-range well-being: "Whether religion can be regarded as an evolutionary adaptation is a meaningful problem. Its solution is to be sought in the consequences of man's refusal to accept 'his own fragmentariness.' A refusal constitutes a rebellion against life, which invites a biological, as well as a spiritual, disaster."<sup>3</sup>

He asserted that religion and culturally transmitted values were not specified by man's genetic constitution any more than man's languages; but he was quite clear that the genetic evolution of the brain and man's capacity for self-awareness was a basis for religion and ethical values. Knowing from archaeological evidence that men had developed special rituals for dealing with death more than a hundred thousand years ago, he joined others in understanding that religions were evolving as early as that time. The dawning awareness that one's self is coming to a dead end is something that is destructive of the human psyche, if it is not at the same time fortified by additional information that is equally credible not only at the level of rational understanding but also at the deeper levels of the human brain's motivational mechanisms, to the effect that death is a necessary procedure toward greater and as yet unseen dimensions of life.<sup>4</sup> Man's genetic information is not able and cannot be made able to provide him with answers to questions raised by rational contemplation of death any more than it can answer any of his other questions raised in the new level of information storage and handling known as culture. Hence human evolution requires some additional, culturally transmitted information of one's long-range meaning in the face of death and other seeming evils of which humans are eternally bound to become painfully aware.

However, in spite of Dobzhansky's becoming one of those giving new status to the fact of the emergence of culture as a real phenomenon of evolution, distinct from genetic evolution, and in spite of his

brilliant insights into the necessity for the emergence of religion within culture to provide humans with essential information that their genes could not supply, he emphatically denied that cultural wisdom could be evolved by a process of natural selection.<sup>5</sup> He and others who have admitted that there is some kind of history that can explain elements of how human cultural values arose have not provided, however, any clear picture of what this is and how it can be tied to the genetically programmed human organism.

Thus one of the most exciting intellectual problems of our time has become how to explain the mystery of the emergence from a beastly ape into a civilized man. How could culture and cooperative behavioral values or motivations (beyond those within one's family) be grafted onto a beast whose genetic programming is known to be selected for the perpetuation only of its own line? How could a beast whose brain's genetic programming could not tolerate a full awareness of the implications of its own demise evolve to cope with an increase of such awareness, even to the point of an occasional self-motivated sacrifice of his body for nonkinfolk? This fascinating problem for science is at the same time an urgent problem for the health of humanity, at a time when eating too much of the fast-growing tree of scientific knowledge in the center of the garden of Eden is causing such an indigestion in moral and religious knowledge that civilizations and individual psyches increasingly are showing signs of approaching breakdowns, disintegration, and death.

Fortunately, there have been an increasing number of scientists from many disciplines who have been working on this problem, some of them seeking to develop the always necessary, supplemental balance of knowledge required to provide true and balanced wisdom for life. In this issue of *Zygon* we cannot go into the broad story of this development, to which we have devoted many past issues and undoubtedly will develop many future issues. But we shall focus upon the developing theories of the relation between biological and social evolution and between knowledge and moral wisdom of one who has gone further than Dobzhansky in providing a scientifically credible approach to understanding the evolution of culture and the role of religion under a process of selection by a nature larger than human nature.

#### CAMPBELL'S REVOLUTION

In his presidential address to the American Psychological Association, Donald T. Campbell has produced a highly credible hypothesis concerning the evolution of human culture under natural selective processes, quite "analogous" (in the technical, biological sense of that

term) to the natural selection of genes.<sup>6</sup> Moreover, he has applied this hypothesis to a brilliant explanation of that highly baffling problem for scientists in view of the facts of genetic evolution: How on earth did man become the first and only creature in all evolution of life on earth to be capable, at least potentially, of species-wide cooperation in societal living? Although differing markedly from Dobzhansky in his understanding of the evolution of religious culture, Campbell joins Dobzhansky in crediting religion with possibly large responsibility for converting this anthropoid from a trooper in kin-group tribes into a civilized man.

Campbell's breakthrough was shocking to his colleagues in the psychosocial sciences. The address was published in the December 1975 issue of the *American Psychologist*. So shocking was it that the May 1976 *American Psychologist* published over forty pages of response, some of it not well informed. It is easy to see why a sophisticated but careless reader from the social sciences might jump to the wrong conclusion that a 1975 paper seeking to reintroduce notions of "natural selection" in sociocultural evolution was as nonsensical as the social Darwinism that was thrown out by the social sciences more than a half century ago. It is easy to see why, if such a leading public symbol of the psychosocial sciences as Campbell suggested that those applying these sciences to the "cure of souls" (psychotherapy) or the "cure of society" (sociopolitical reform) were perhaps less scientifically sound than religious practitioners, it might be offensive to those who think they are replacing what seems to them obsolete and repressive myths with scientifically backed remedies for healing troubled souls and societies. One could expect that anyone who proposed scientific justification for morals and religion, a proposal that philosophers for a couple of centuries have established as essentially impossible, might not find ready acceptance from many an educated respondent. These are some of the problems that Campbell realized he would face as he composed his presidential address. In my view he has faced these problems and presented a highly sophisticated and carefully prepared paper that deals with them insofar as possible in a finite speech. I believe that, if it is read with care and with suitable information background in the pertinent disciplines (or a willingness to grant some reality to Campbell's assertions on the basis of his information in those disciplines), most younger readers (and only those already prepared older readers—Planck's law!) will find highly justified a new paradigm for understanding the nature of man and his institutions and their history in terms of real evolutionary processes.

But this address is not merely a fundamental contribution to our scientific understanding of man but also a fundamental contribution to

practical religion and the possibility of the revitalization of religious wisdom and more effective morals in time to prevent something worse than a new Dark Age of civilization.

Because of our judgment of the basic significance of Campbell's paper, we are republishing it in this issue of *Zygon*, despite the fact that *Zygon* readers could be referred to the *American Psychologist* and despite the fact that in our September 1975 issue we published what we might call one of his draft sketches of a part of this address.<sup>7</sup> But the presidential address is a more comprehensive picture painted for what he knew would be a very competent and critical community of colleagues in the psychosocial sciences. Moreover, it is one of those fundamental documents in our field that we take pride in finding and bringing to the growing readership who looks to *Zygon* as a source for fundamental documents on the implications of the sciences for man's moral and ultimate or long-range concerns. While most of these have been documents whose original publication has been in *Zygon*, there have been a handful of outstanding ones that have been reprinted from other journals not known or read by more than a small percentage of *Zygon* readers, so interdisciplinary is our field.

As a further introduction and general background for reading Campbell's paper we reprint in this issue an account, arising from some recent scientific-frontier discussions by a group with which Campbell has had little or no contact, of "The Relations between Biological and Sociocultural Theory," written by an eminent historian of science, A. Hunter Dupree of Brown University, and an eminent creator of sociological theory, Talcott Parsons of Harvard University.

Following Campbell's paper are a number of responses to it that were sent to the *American Psychologist* but which had to be rejected for various reasons, including the sheer volume of responses, late date of submission, and the extra length of some of them. We have favored publishing responses which show some evidence of already understanding the significance of Campbell's new conceptual system, including the natural "selection process" operating in human psychosocial affairs that is different in mechanism, but not in principle, from the natural selection that operates on our gene pool. In some cases these responses have been revised by their authors for *Zygon*. The papers by John A. Miles, Jr., and by Robert Boyd and Peter J. Richerson have been prepared especially for *Zygon*, as has been my own concluding paper.

This issue of *Zygon* should be useful to all sorts of readers wishing to understand a newly emerging conceptual system or paradigm concerning the nature of man which will help clarify the relations of

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private experiences, the history of culture (including religion), and the natural sciences.

### NOTES

1. Hudson Hoagland, personal communication.
2. Theodosius Dobzhansky, "Ethics and Values in Biological and Cultural Evolution," *Zygon* 8 (1973): 261-81.
3. Theodosius Dobzhansky, "An Essay on Religion, Death, and Evolutionary Adaptation," *ibid.* 1 (1966): 318.
4. Alfred E. Emerson and Ralph Wendell Burhoe, "Evolutionary Aspects of Freedom, Death, and Dignity," *ibid.* 9 (1974): 156-82.
5. Dobzhansky, "Ethics and Values," pp. 276, 272-79.
6. Donald T. Campbell, "On the Conflicts between Biological and Social Evolution and between Psychology and Moral Tradition," in this issue.
7. Donald T. Campbell, "The Conflict between Social and Biological Evolution and the Concept of Original Sin," *Zygon* 10 (1975): 234-49.