

# THE EPIC OF EVOLUTION AS A FRAMEWORK FOR HUMAN ORIENTATION IN LIFE

by Gordon D. Kaufman

*Abstract.* This article sketches what is required of a world picture (religious or nonreligious) that is intended to provide orientation in the world for ongoing human life today. How do we move from conceptions and theories prominent in the modern sciences—such as cosmic and biological evolution—to an overall picture or cosmology which can *orient* us for the effective address of today's deepest human problems? A *biohistorical* conception of the human is proposed in answer to this question.

*Keywords:* biohistorical; creativity (serendipitous); culture; epic of evolution; faith; historicity; history; mystery; orientation (in life); religion; trajectories (cosmic and historical); world picture.

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The evolutionary paradigm has increasingly become a fundamental organizing principle within the physical and the social sciences, as Loyal Rue has emphasized, and “it has become difficult to think constructively in any of the sciences without assuming a broad evolutionary perspective” (Rue 1996, 7). Here I want to consider how one moves from such concepts and theories developed in various sciences to (a) the affirmation that we should now develop an overall world picture or cosmology in which evolutionary development is taken as the fundamental organizing principle; (b) the employment of this evolutionary world picture not only as a *description* of the basic cosmic order in which human life has appeared but also as an aid in making *normative* judgments about how human existence should be oriented and lived.

## I

I think we can best see what is involved in the first affirmation, regarding the legitimacy of moving from various bodies of scientific data and

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theory to a broad comprehensive conception of an evolutionary epic, if we recognize forthrightly that the task we are setting ourselves is fundamentally *religious* in character. We are seeking to construct a picture or conception of the overall context of human life (as we understand this today) that will (a) orient us with respect to the issues now requiring our most urgent attention, and that will also (b) significantly motivate and energize us to address these issues. In the past this sort of double function—indispensable for self-conscious beings capable of acting purposively and taking responsibility for their actions—has been performed largely by the religio-moral symbol systems produced in human cultures everywhere. The various religions have presented sharply different construals of the ultimate mystery within which human existence transpires, and they have usually succeeded in setting out pictures sufficiently intelligible and meaningful to enable women and men in quite diverse times and places both to come to some significant understanding of themselves in relation to the context within which they lived and to live out their lives fruitfully and meaningfully (more or less) within that context. It was their religion (as Durkheim saw) that gave a people its sense of solidarity as a group, uniting them in common cause and common sense of meaning. For many today, however, our traditional religious world pictures no longer seem to provide this indispensable orienting function. In this paper I am attempting to address this problem by examining whether the so-called epic of evolution can effectively take up that role, whether this epic can provide us with the “best” or “truest” or “most helpful” construal available today of the ultimate mystery of things.

This way of characterizing this venture—invoking the ultimate mystery of things—may seem excessively grandiose and pompous. But it is important, I think, that we not hide from ourselves the fact that we are dealing here basically with the question of ultimate mystery. We humans, living on a relatively small planet revolving around a third-rate sun in one among the millions of galaxies that today appear to constitute the universe, are not in a strong position to speak with great confidence about the overall context of human existence; to speak, that is to say, as though we *know* what is in fact the *whole* (the reality) of which we (and all else that we can imagine or know) are part, or even know whether it is appropriate to think of this widest context of our lives as a “whole.” We humans clearly move beyond our depth when we pose questions of this sort to ourselves, but there seems to be no way to avoid these issues. For we live and think, experience and act, in terms of meanings and purposes, values and significances. It is hardly possible for us to avoid wondering, therefore—especially in moments of crisis or calamity or

great suffering, or moments of overwhelming tedium and boredom—whether human life itself has any meaning, whether with all its burdens it is worth carrying on.

The various religions (and in modern times, quasi-religions like Marxism, humanism, and nationalism) present, in face of this profound but inscrutable mystery, a variety of visions or conceptions of human life and its context. Each of these, we can say, sets out a distinctive picture of the whole within which life falls; and each implies some specific claims about the meaning (or lack of meaning, which is also a meaning!) of human existence, thus suggesting how human life should be understood and lived. If we speak here of the epic of evolution as providing an appropriate conception of this whole for today, we also, just as much as our traditional religions, are proposing a way to think about the human situation in face of the ultimate mystery of things. We, like they, are attempting to move—by means of a leap of the imagination that (in our case) draws upon a variety of astrophysical, geological, chemical, biological, historical, and other available data, and goes on then to weld these diverse matters into an all-comprehensive vision of reality, of the world—we are attempting to move to a vision that goes well beyond what we can properly claim to be knowledge, a vision that highlights those features of the context of our lives that seem to many of us central if life is to be intelligible to us today. In constructing what we are calling the epic of evolution we are thus taking up religious issues of the most fundamental sort, issues ultimately quite baffling and obscure and shrouded in mystery.

The vision that we are attempting to put together is one that we hope will be appropriate for and illuminating of our human existence today—with its wide range of knowledges and technologies and its enormous ecological, political, social, psychological, moral, and religious problems—a vision that can provide effective orientation in our lives, as we seek to identify and address those questions which most require our attention and energies. Aware as we are that we are rapidly destroying planet Earth's capacity to sustain many forms of life (including our own), it seems obvious that we must develop a new vision or conception of the whole, of the overall context within which human life falls, if we are to live and act responsibly today.

## II

The wide modern consensus (at least among many university-trained people) that humankind has emerged out of less complex forms of life in the course of evolutionary developments on planet Earth over many millennia, and that we could not exist apart from this living web that continues to nourish and sustain us, is a basic presupposition of our

thinking about these matters. This presupposition as just stated, however, is much too general to provide significant orientation for us in the world in which we actually live; for it says nothing about the way in which—within this evolutionary setting—what I shall call the uniquely *historical* features (that is, the distinctive sociocultural features) of our human existence are to be understood. The natural order is no doubt the wider context within which human history has emerged. But it has been through our *historical* sociocultural development over many millennia, not simply our biological evolution, that we humans have acquired many of our most distinctive characteristics. Our increasingly comprehensive knowledge of the natural world in which we live, for example, and of our human constitution and possibilities, has provided us with very considerable powers over our immediate environment and over the physical and biological (as well as sociocultural and psychological) conditions of our existence. And we human beings and the further course of human history are therefore no longer *completely* at the disposal of the natural order and the natural powers which brought us into being in the way we were ten millennia or so ago. Over the course of history, we humans have gained, in and through our various knowledges, some measure of transcendence over the nature of which we are part. And with our developing practices and skills, growing in modernity into enormously powerful technologies, we have utterly transformed the face of the earth and are beginning to push on into outer space.

How should we understand (in connection with our evolutionary story) these features of our humanity that have emerged largely in human history? It appears to be qua our development into beings shaped in many respects by *historico-cultural* processes—that is, humanly created, not merely natural biological processes—that we humans have increasingly gained some measure of control over the natural order of which we are part, as well as over the onward movement of history. How should we understand, within its context in nature, this distinctive mark of our humanness, our *historicity* (as we may call it)? When we pose this question, the ultimate mystery of things—in face of which we are constructing our epic of evolution—begins to manifest itself quite close to home: namely, in our understanding of our very humanness. On the one hand, in our transcendence of the natural order within which we emerged (through our creation of enormously complex cultures), we humans, as we know ourselves today, are obviously radically different from any other living beings; on the other hand, in our *absolute dependence* (to adopt a phrase of the nineteenth-century theologian Schleiermacher) on the web of life from which and within which we have emerged, we humans are at one with every other species. What does the fact that our sort of being—a being with historicity, a being shaped decisively by a history that has given us

power ourselves to shape future history in significant ways—has emerged within the natural order tell us about the way in which human existence should be oriented in the world, how human life should be lived?

I am seeking to call attention here to what, in my book *In Face of Mystery*, I have called the *biohistorical* character of human being (Kaufman 1993; see especially part 2). I am suggesting that we cannot understand human life adequately simply in biological terms; the in-building of culturally created dimensions and processes in our human nature means that *history* has been as indispensable a factor as biology in bringing into being our humanity (in the various forms in which we are aware of it today). To be sure, the possibility of there being humans at all resulted from a process of biological evolution through some billions of years; but the actual emergence of what is most *distinctly* human came about through the growth of historico-cultural processes that helped to push the development of *Homo sapiens* in decisively important directions. Even the biological aspects of the organism that finally emerged as human are in fact, as the anthropologist Clifford Geertz has pointed out, “both a cultural and a biological product” (Geertz 1973, 67); and the present biological organisms, if left simply to themselves, would be so seriously deficient that they could not function. As Geertz sums up the matter: “We are . . . incomplete or unfinished animals who complete or finish ourselves through culture—and not through culture in general but through highly particular forms of it: Dobuan and Javanese, Hopi and Italian, upper-class, academic and commercial” (Geertz 1973, 49). The growth of human cultures—which increasingly came to include flexible and complex languages, a great variety of forms of differentiated social organization, the development of skills of many different sorts, the creation of innumerable kinds of artifacts, including especially tools that extend human powers in many new directions, and so on—the growth of human cultures (and, correspondingly, of human symbolic behavior) has affected significantly the actual *biological* development of the predecessors of today’s *Homo sapiens*; it has had particularly strong effects on the evolution of the human brain (see Deacon 1996). We are, then, all the way down to the deepest roots of our specifically *human* existence not simply biological beings, animals; we are biohistorical beings, and it is above all our historicity that gives our existence its distinctly human character. It is only because of our historicity (to take a pointed example) that we are able to ask the sorts of questions we are considering here; apart from our historicity (and the symbol-creating and symbol-using powers with which it has endowed us), we could not engage in the activity of questioning at all.

How is this increasing power and significance of historicity as a central feature of our human being, and indeed a feature of the natural

order itself, to be understood? What I am suggesting is that we will be able to think intelligently about the epic of evolution as the framework within which we seek to understand human existence—with its many manifestly *historical* problems—only if we think of it as a *biohistorical* evolutionary epic, not simply a physical or biological process.

### III

Our religious traditions have long understood that with respect to the deepest mysteries of life and death, we can only make moves of *faith*. That is, we can *commit* ourselves to this or that construal of the mystery that confronts us, and we can live and act in faithfulness to our commitment, but we must recognize that all such commitments go well beyond the knowledges at our disposal. In the early years of this century, William James spoke of what he called “the will to believe” as a basic attitude without which it would be impossible for humans to move forward into the open and unknown future that we must always face and which in many decisive moments of life may be almost too difficult to bear. Consider, for example, our resolve to trust our physician as he or she gives us medical advice and care in a time of serious illness, or the decision to commit ourselves for life in marriage to another human being. Even in relatively trivial matters, such as the agreement to go with friends to this particular movie rather than that one, we usually proceed largely on faith, on the basis of uncertified beliefs rather than well-confirmed knowledge. With respect to truly ultimate questions as well, our only choice is to move forward, committing ourselves to a particular construal of the ultimate mystery of things, in an act or attitude of faith. Human life goes on because of our will to believe, because of the deep-seated attitudes of faith and trust and loyalty that enable us to continue moving forward into an uncertain future even though adequate pertinent knowledge is not available.

It is, then, an act of faith (I am suggesting) that we are exploring, an act of faith in face of the profound mysteries which humans confront in modern/postmodern life: the proposal that we order and orient our lives in terms of what is being called the epic of evolution. I am seeking to specify certain ways in which this proposal must be refined if it is to aid significantly in the orienting of human existence. Only if it is understood as a *biohistorical* epic, I have suggested, not merely a physical and biological one, can it function effectively for human orientation. However little we may understand the complex interlocking of the biological and the historical that has made the emergence of human beings possible on planet Earth, these must each be given significant place in our account if it is to provide us with some sense of our actual niche within the

natural order on Earth, thus helping us identify and address the complex problems we humans must today face.

We will not be able to deal effectively with, for example, our enormous ecological problems unless we simultaneously find ways to come to terms with the complex of political, social, economic, cultural, and religious matters—that is, with the *historical* issues—with which these problems are interconnected. These historical issues are not only internal to each nation and society; they are international and multicultural as well. We must therefore find ways to think politically, economically, culturally, and religiously *in global terms*—global terms which are simultaneously *pluralistic* terms (or else they will not in fact be truly global). For human history has from very early times been thoroughly pluralized, and there is no reason to expect this condition to disappear in the foreseeable future. This means that it is not adequate for us to think of our major problems and their solutions in terms simply of what will work in our own society or in the relatively elite cultural segment of that society of which we may be part. It must in some significant way take account of, and provide orientation for us in respect to, those huge segments of Earth's peoples and cultures that know nothing of the epic of evolution, or even actively despise it and its advocates. Only to the extent that the epic of evolution is itself framed so as to orient us with respect to these complex historical issues that we face today, as well as to physical and biological questions—that is, only to the extent that it is understood as a biohistorical epic of evolution and history complexly interlocked—can it be regarded as presenting a world picture appropriate for addressing today's problems.

For a world picture to be effective in actually orienting human lives, it must (a) provide a persuasive interpretation of the *past* out of which we and our current problems have come; (b) provide an interpretation of the *present* which will help us make judgments and develop programs of action with respect to important issues that require address; and (c) provide a grounding for hope about the *future* that can help motivate women and men to act constructively and effectively as they seek to come to terms with their various problems. As Loyal Rue has suggested, an overarching religious epic must take up, not only the question of how things are, how our world and its contents have come to be what they are; it also must make proposals regarding which things matter, what is really important in life, what sort of values and criteria should guide our human decisions and actions (Rue 1996, 1–3). To do that it must provide us with a picture of the past *in its complex interconnection with* both the present—our concrete, living human present of ongoing decision and action—and the future into which we humans expect to move. That is, it needs to present the human story in relation to the overall context

within which it occurs, the present and future (however uncertain or indeterminate these may be) as well as the past out of which they grow. This is a tall order indeed.

It is not surprising, however, that this sort of tall order has appeared in Western culture as the religious traditions that have nourished us in the past have become increasingly secularized. Unlike most other religious traditions around the globe, the Hebraic cosmic vision—to which our Western religiousness is heir—had the basic form of a temporal-historical process of development. The biblical picture portrays human life in a *created* world, a world that began at a particular point in time, that developed in important ways through time because of God's continuing activity within it, a temporal world. This human story includes both a fall away from God and the emergence of diverse human languages, cultures, and religious practices and beliefs; and it culminates in God's expected overcoming of the sin and evil that humanity had brought into the world. Although many of the *details* of the evolutionary epic differ sharply from the biblical story, the overall *form* of these two accounts is much the same: human life is understood as part of a greater cosmic temporal-historical-evolutionary development.

The biblical account, however, in contrast to the evolutionary story as usually presented, is able to give this developmental process profound human meaning. It displays (*a*) the human dimension of the story, human history, as possessing an overall unity from beginning to end, brought about by God's presence and activity throughout, an activity (*b*) believed to be creatively and redemptively moving humankind toward the full realization of God's original loving purposes for humanity. That is, it was the ongoing presence and humanizing activity of *God* that brought the past, present, and future of the world, and of humankind within the world, together into a coherent whole of profound human meaning. This story provided basic orientation for women and men by making it clear that in relation to God—to God's purposes, God's ongoing activity, God's will for humankind—we could find fulfillment and meaning in life. Humans were motivated to orient themselves in accordance with this vision by the hope it offered of ultimate human redemption and realization, as God's purposes were consummated. In this story the connection between (to return again to Rue's formulation) *how things are* in the world and *which things matter* was brought about and secured by the central role and the specific character of God.

#### IV

How, now, in the epic of evolution, can past, present, and future be held together in a unity of development that can provide both orientation in the world for us humans and motivation to live and act in accord with



this orientation? If this question remains unanswered, the epic will not be able to bind together, in a way sufficiently meaningful to evoke strong commitments from women and men, our knowledges about ourselves and the world around us with meanings and values that can help us orient our lives. I would like to make a proposal about how we might address this problem. I shall introduce two concepts that I think bring out certain humanizing dimensions implicit in the biohistorical epic of evolution. These concepts can help us connect our past with the present and future in a manner that enables the epic to bear directly on matters of central importance to human beings qua our humanness, that is, qua our ongoing biohistorical existence. When the epic is articulated in terms of these concepts, it becomes a vehicle that can help orient present human life and actions in their overall biohistorical context: a vehicle, moreover, which also encourages motivation and commitment to live and act in accord with this orientation.

First I want to call attention to what I call the *serendipitous creativity* manifest throughout the universe—that is, the coming into being through time of the new and the novel, whether this leads to what appear (from human and humane perspectives) to be horrifying evils or great goods. Second, since the idea of a powerful teleological movement (God's purposive activity) underlying and ordering all cosmic and historical processes has become quite problematical in twentieth-century thinking about evolution and history, I propose to replace it with a more modest conception: what I call *directional movements* or *trajectories* that emerge spontaneously in the course of evolutionary and historical developments.<sup>1</sup> This more open (even random) notion—of serendipitous creativity manifesting itself in evolutionary and historical trajectories of various sorts—fits in with, but amplifies in important ways, today's thinking about cosmic processes. It is a notion that can be used to interpret the enormous expansion and complexification of the physical universe (from the Big Bang onward), as well as the evolution of life here on earth and the gradual emergence of human historical existence. This whole vast cosmic process manifests (in varying degrees), I suggest, serendipitous creativity: the coming into being through time of new modes of reality. It is a process that has frequently produced much more than would have been expected, given previous circumstances—indeed, more than might have seemed possible, even moving eventually into the creation of human beings with their distinctive history and historicity.

There are, of course, other plausible ways to view today's universe. Taking this position therefore involves a step of faith going beyond our earlier faith affirmation with respect to the appropriateness of characterizing the overall context of human existence as a biohistorical epic of evolution.<sup>2</sup> What does it mean to regard this overarching context of

human life, the universe, as a serendipitously creative process or movement? We can begin to answer that question if we consider briefly some features of cosmic and (especially) biological evolution as these are widely understood today.

Movement in and through time, as traced today through the long history of the universe and particularly through the evolution of life on earth, appears to be movement eventuating in unprecedented developments, ever new forms—not simply the repetition of patterns that forever repeat themselves. Moreover, these novel developments, to the extent that they involve the appearance of new evolutionary lines (for example, new species), each have specific potentialities for developing further in some directions but not in others. Such tendencies, as biologist Ernst Mayr says, “are the necessary consequence of the unity of the genotype which greatly constrains evolutionary potential” (Mayr 1988, 435). Ever more complex species have emerged along some evolutionary lines, and we can discern *trajectories* of a sort eventuating in these new forms. These trajectories are visible, however, only to the *retrospective* or backward-looking view that we necessarily take up when we survey the past, and there is no reason (from a biological standpoint) to suppose that the process of evolution has actually been directed toward this or that specific goal, or toward any goal whatsoever. The processes of natural selection, it appears, themselves bring about the directional momenta that emerged along the various lines on which life has evolved.

On one line (our own), what may be regarded as a new order of reality—history—has emerged. The order of history, with its high development of cultures and modes of social organization, is the only context (so far as we know) within which beings with freedom, creativity, self-consciousness, and responsible agency have appeared. It is not that the evolution of life has been a sort of straight-line movement, up from the primeval slime to humanity with its historicity and complex histories: evolutionary developments have obviously gone in many directions. Moreover, it is not evident that the human form is as biologically viable as are many other forms. So from a strictly *biological* point of view (with its emphasis on survival, perpetuation of the species), there is little reason to think that human life is the most successful or important product of the evolutionary process. However, we are not confining ourselves here to strictly biological considerations: our principal concern is with our distinctly human need, as *biohistorical* beings, to find a way to orient ourselves in this evolutionary world.

As we have noted, fully human beings (beings with great symbolic facility, beings with *historicity*) did not appear simply as the last stage of a long, strictly biological process: it was only after many millennia of distinctly *historical* developments (in concert with continuing biological evo-

lution) that human existence as we presently know it came on the scene. Moreover, only with the emergence of the particular *historical standpoint* of late modernity has this biological-historical movement eventuating in contemporary humankind become visible—thus making possible a movement from what Brian Swimme has called “microphase” consciousness to “macrophase” consciousness.<sup>3</sup> As we humans today look back at the gradually cumulating evolutionary and historical development that produced us, outlines of a cosmic trajectory, issuing in the creation of beings with historicity, and ultimately in beings with macrophase consciousness, become discernible. There are, no doubt, many other cosmic trajectories as well, moving in quite different directions. But from where we humans stand, with our specifically human needs and interests and our contemporary human values, the emergence of this particular trajectory is obviously of great importance: for this manifestation of the serendipitous creativity in the cosmos has given us our very existence, and it quite properly evokes from us both awe and gratitude. Let me make myself clear: I am *not* claiming that humans are the best, or the highest, or the most important of all species of life. I am claiming that because of our great knowledge and power, especially our power to destroy so much of life, the question of our proper place in the ecological order on Earth is an extraordinarily complex one, unlike that of any other species.

To emphasize the *connection* of what is distinctive about human existence, our humanness and our historicity, with the creativity in the ultimate nature of things, the ultimate mystery, is to take a third step of faith, a step of much greater specificity and human significance than those previously mentioned. It is a sort of faith, however, not as uncommon among intellectuals these days as might at first be supposed. All speculation about, and search for, intelligent life elsewhere in the universe presupposes that there is some elemental dynamism in the cosmos that can issue in the emergence (in diverse locutions) of what we have here been calling historicity—humanlike reality—a presupposition that gives rise to the hope that we may, if we search long enough and carefully enough, eventually uncover signs of such highly complex forms of life in regions far removed from planet Earth. Where the particular trajectory that brought human existence into being on our planet will move in the future, we do not, of course, know. Perhaps it will be toward the opening of ever new possibilities for human beings, as we increasingly take responsibility for our lives and our future. Perhaps it will go beyond humanity and historicity altogether, however difficult it is to imagine what that might be. Perhaps it will come to an end in the total destruction of human life.

This basic twofold idea—the notion of (*a*) cosmic serendipitous creativity which (*b*) manifests itself through trajectories of various sorts

working themselves out in longer and shorter stretches of time (an idea consonant with modern evolutionary thinking though not necessary to it)—can help us define our appropriate place within the evolutionary cosmos that is our home. Our human existence—its purposiveness, its social-moral-cultural-religious values and meanings, its glorious creativity and its horrible failures and gross evils, its historicity—has, as can now be seen, a significantly distinctive position within the vast, otherwise (seemingly) impersonal cosmic order. With the emergence of historical modes of being, human being, explicitly purposive (or teleological) patterns have appeared in the universe, as human intentions, consciousness, and actions began to become effective. We can say, then, that a cosmic trajectory, which had its origins in what seems to have been mere physical movement or vibration, has (in this particular instance) gradually developed increasing directionality, ultimately creating a context, a niche, within which deliberate purposive action could emerge and flourish.<sup>4</sup> Our three steps of faith have brought us to a perspective on the cosmic order from which we can glimpse the place within it that is our proper home. We are, that is to say, beginning to gain some *orientation* in the universe (as we think of the universe today).

Let us take note of five points in this connection. First, this approach provides us with a frame within which we can characterize quite accurately, and can unify into an overall vision, what seems actually to have happened, so far as we know, in the course of cosmic evolution and history. Second, this approach gives a significant, but not dominant, place and meaning to the distinctive *biohistorical* character of human life and history within this cosmic process. Thus, third, it provides a framework that can assist communities (and individuals) to develop conceptions of value and meaning that will enable them to understand better and assess more fully both the adequacy of the biological context of their lives and the import of the historical sociocultural developments through which they are living, in this way facilitating their taking up more responsible roles with respect to these contexts and developments.<sup>5</sup> Fourth, because of the linkage that this approach highlights, between serendipitous cosmic creativity and the human (including the humane values so important to us), it can support the hope (but not certainty) that our biohistorical evolutionary trajectory may move forward in a significantly creative way as the future unfolds. This is a hope for the overall direction of future human history—hope for truly *creative* movement toward ecologically and morally responsible, though still quite pluralistic, human existence. Finally, fifth, a hope such as this, grounded on the creativity manifest throughout the cosmos (a creativity that, in our trajectory, works in part through the creativity of our own powers), although carrying much less assurance than traditional religious expecta-

tions of, for example, the coming of God's kingdom, can help motivate us to devote our lives to bringing about the more humane and ecologically rightly ordered world to which we all aspire. Thus, our human past, present, and future are drawn together in this overall vision of the ongoing biohistorical process of which we are part.

V

This frame of orientation or vision of reality—this more amplified conception of the biohistorical epic of evolution, in which the evolutionary unfolding is taken to be grounded in serendipitous cosmic creativity—is not, as I have already suggested, in any way forced upon us: it can be appropriated only by means of our own personal and collective decisions, our own acts of faith. It has sufficient richness and specification to provide significant orientation for our time, but it can accomplish this only if we decide to commit ourselves to it, ordering our lives and building our futures in the terms it prescribes. Acceptance of this vision can help women and men in our world—not only those who think of themselves as religious in some more or less traditional sense but also modern/postmodern women and men of other quite different persuasions<sup>6</sup>—to gain some sense of identity, some sense of who we humans are and what we ought to be doing with our lives. In the hope that our biohistorical trajectory may move creatively toward a more humane and ecologically well-ordered world, we can be motivated to give ourselves in strong commitment to its continuing growth and development.

The world, I have proposed, should be seen as a serendipitous process constituted by a variety of trajectories, one of which has brought into being the historical order and may be continuing in further creativity. This trajectory, including its biohistorical extension (on which we humans find ourselves), represents at least one significant direction in which the cosmic process has been moving in our region of the universe. We humans are today being drawn beyond our present condition and order of life by creative impulses suggesting movements now required of us. If we respond in appropriately creative ways to the historical and ecological forces now impinging upon us on all sides, it is possible (though not certain) that a biohistorical niche for humankind, more appropriate to the wider ecological order on earth, may be brought into being. However, if we fail to so respond, it seems likely that humans may not survive much longer. Are we willing to commit ourselves to live and to act in accord with the imperatives laid upon us by the biohistorical situation in which we find ourselves, in the hope that our action will be supported and enhanced by cosmic serendipitously creative developments? In my view it is this kind of hope and faith and commitment to which the biohistorical epic of evolution calls us.

## NOTES

1. For further discussion of *serendipitous creativity* and of evolutionary and historical *trajectories*, see Kaufman 1993, especially chapters 19–20.

2. The concept of *steps of faith* is developed and elaborated in Kaufman 1993; see especially pp. 63 f. and chapters 17 and 29.

3. Swimme emphasized this point in his several chapel talks at the Forty-Third Annual Conference of the Institute on Religion in an Age of Science (IRAS) at Star Island, New Hampshire, 27 July–3 August 1996.

4. It has recently begun to appear possible, even likely, that the continuous increase in entropy over time in the universe may itself, in the natural course of events, give rise—through the development of so-called dissipative systems—to complex forms of organization, eventually including living systems.

[T]he picture that is emerging in . . . recent thermodynamic analyses . . . [suggests that] the movement of the [entropic] stream *itself* inevitably generates, as it were, very large eddies *within* itself in which, far from there being a decrease of order, there is an increase first in complexity and then in something more subtle—functional organization. . . . There could be no self-consciousness and human creativity without living organization, and there could be no such living dissipative systems unless the entropic stream followed its general, irreversible course in time. Thus does the apparently decaying, randomizing tendency of the universe provide the necessary and essential matrix (*mot juste!*) for the birth of new forms—new life through death and decay of the old. (Peacocke 1984, 430)

5. A sketch of the ethic implied by the distinctively *biohistorical* character of human existence will be found in Kaufman 1993, chapters 10–15.

6. I have developed the notions of *serendipitous creativity* and of evolutionary and historical *trajectories* in this article without drawing theistic implications or making any specific theistic claims. The argument for this sort of world picture may seem considerably more persuasive, however (at least to some), if the ultimate point of reference in terms of which all is understood is named *God* (the most comprehensive and profound symbol in our Western cultures and languages) rather than *creativity* (a much vaguer, more impersonal, and less familiar notion). It is not overly difficult to set out the main outlines of this world picture in terms of a theocentric—indeed, specifically Christian—vision of the cosmos and human life. An interpretation of this latter sort is presented in some detail in Kaufman 1993. A briefer, less elaborate theocentric interpretation is given in Kaufman 1992, 379–401.

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