

TEILHARD DE CHARDIN
AND THE CONCEPT OF PURPOSE

by *Van R. Potter*

Teilhard de Chardin was a man whose entire life was devoted to the reconciliation of science and religion. At the very outset I wish to make clear that he felt no obligation to limit himself to science. He was an advocate using all the means at his disposal. Because of his strong religious training during his formative years, plus his experience as a stretcher bearer in World War I, he could never turn his back on the crying need of his fellowmen for spiritual support. Yet his early interest in geology and mineralogy evolved into a study of fossils and human paleontology and inexorably led him into the area of human evolution and finally into an over-all philosophy of the evolutionary process. While many other men have trod a similar path and found it incompatible with the ancient religious beliefs, Père Teilhard believed that he had a vision that was grand enough to embrace the best parts of Christian humanism and science too. It is perfectly clear that there were many aspects of Christian theology that Père Teilhard simply did not wish to write about, and it is his steadfast attempt to come to grips with the issue of human progress that makes me so interested in his attempts to rationalize science and religion. For Père Teilhard, human progress is the goal of the universe. In other words, the whole evolutionary process operates in terms

Van R. Potter is professor of oncology at the University of Wisconsin Medical School, Madison. This paper was originally presented on October 29, 1966, at the Teilhard de Chardin Symposium, Edgewood College, Madison, Wisconsin. An audio tape of the complete symposium is available (catalogue no. 2120) from Argus Communication, 3505 North Ashland Avenue, Chicago, Illinois 60657.

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of a purpose whose sole aim is to bring mankind slowly and inexorably up to a point just short of the divine, which he refers to as the Omega Point.¹

Anything negative that I have to say about Père Teilhard is said with considerable reluctance. I wish I could report that other evolutionists like George Gaylord Simpson,² Theodosius Dobzhansky, and Ernst Mayr³ could agree with Père Teilhard that a divine purpose could be fulfilled and human progress could be assured if only the indicated path were to be taken. I wish that I could avoid the role of the critic and be satisfied with the great humanistic creed that Père Teilhard has attempted to outline, since he has come so far from the ideas that must have prevailed during his childhood and since I am convinced that he is correct in saying that man must make a conscious choice to build a better future.

But I must play out my role as a representative of the intellectual background from which I arise, and hope that we can begin a dialogue out of which a further insight into the human purpose may emerge. For if Père Teilhard is basically correct in his beliefs, they will improve with discussion, and if he is in any way in error, it behooves us to sift and winnow his wisdom and separate the wheat from the chaff.

I will begin by calling your attention to certain passages that illustrate just how far Père Teilhard moved in the direction of the position I shall represent, and, indeed, frequently he is more optimistic about science than I am. I will then discuss some of the information that was not available to Père Teilhard and conclude with a view that hopefully some future Père Teilhard will be able to incorporate into a humanistic philosophy with as much imagination and poetry as Père Teilhard brought to bear on the concept of Darwinian evolution.

TEILHARD AS AN EVOLUTIONIST

Père Teilhard was an evolutionist without reservation. As Dr. George Beadle, former president of the University of Chicago, once said, the trouble with evolution is that if you believe in a little of it, you have to believe in all of it. Dr. Beadle was willing to believe in evolution all the way from protons and electrons to molecules, cells, and man, admitting perhaps a divine plan in the protons and electrons whose origin he could not account for.⁴

Père Teilhard was not far behind. In *The Phenomenon of Man* he said:

Blind indeed are those who do not see the sweep of a movement whose orbit infinitely transcends the natural sciences and has successively invaded and conquered the surrounding territory—chemistry, physics, sociology and even mathematics and the history of religions. One after the other all the fields of human knowledge have been shaken and carried away by the same current in the direction of the study of some development. Is evolution a theory, a system or a hypothesis? It is much more: it is a general condition to which all theories, all hypotheses, all systems must bow and which they must satisfy henceforward if they are to be thinkable and true. Evolution is a light illuminating all facts, a curve that all lines must follow.⁵

Père Teilhard had a correct understanding of the biology of man when he said: "Zoologically speaking, mankind offers us the unique spectacle of a 'species' capable of achieving something in which all previous species had failed. It has succeeded, not only in becoming cosmopolitan, but in stretching a single organized membrane over the earth without breaking it."⁶ This single sentence epitomizes the message in Carleton Coon's new volume on *The Origin of Races*, which has been exquisitely reviewed by Ernst Mayr.⁷

Père Teilhard was aware of the latest developments in molecular biology, and he fully appreciated the role of chance variations in organic evolution. His words were as follows:

Of old, the forerunners of our chemists strove to find the philosopher's stone. Our ambition has grown since then. It is no longer to find gold but life; and in view of all that has happened in the last fifty years, who would dare to say that this is a mere mirage? With our knowledge of hormones we appear to be on the eve of having a hand in the development of our bodies and even of our brains. With the discovery of genes it appears that we shall soon be able to control the mechanism of organic heredity. And with the synthesis of proteins imminent, we may well one day be capable of producing what the earth, left to itself, seems no longer able to produce: a new wave of organisms, an artificially provoked neo-life. Immense and prolonged as the universal groping has been since the beginning, many possible combinations have been able to slip through the fingers of chance and have had to await man's calculated measures in order to appear. Thought artificially perfects the thinking instrument itself; life rebounds forward under the collective effect of its reflection. The dream which human research obscurely fosters is fundamentally that of mastering, beyond all atomic or molecular affinities, the ultimate energy of which all other energies are merely servants; and thus grasping the very main-spring of evolution, seizing the tiller of the world.⁸

Here Père Teilhard seems to be outsciencing the scientists, none of whom are fully prepared to seize the tiller of the world. What Père Teilhard is discussing I have referred to elsewhere as potentially dangerous knowledge, or knowledge without wisdom.⁹

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TEILHARD'S USE OF THE EVOLUTIONARY PICTURE TO UNDERSTAND RELIGIOUS VALUES

I am in complete agreement with Père Teilhard when he says: "Modern thought is at last getting acclimatized once more to the idea of the creative value of synthesis in the evolutionary sense. It is beginning to see that there is definitely more in the molecule than in the atom, more in the cell than in the molecule [more in the organism than in the cell], more in society than in the individual [and later he says, in effect, more in the Omega Point than in Society as we know it]."10

If we think of the Omega Point in terms of a scientifically and philosophically oriented ideal society, which Père Teilhard simply rationalized in terms of his own religious background, we can remove the veil of mystery and come to terms with means and ends. He says: "Mankind, the spirit of the earth, the synthesis of individuals and peoples, the paradoxical conciliation of the element with the whole, and of unity with multitude—all these are called Utopian and yet they are biologically necessary. And for them to be incarnated in the world, all we may well need is to imagine our power of loving developing until it embraces the total of men and of the earth."11

He continues:

It may be said that this is the precise point at which we are invoking the impossible. Man's capacity, it may seem, is confined to giving his affection to one human being or to very few. [They say that] beyond that radius the heart does not carry, and there is only room for cold justice and cold reason. [They say that] to love all and everyone is a contradictory and false gesture which only leads in the end to loving no one.

To that I would answer that if, as you claim, a universal love is impossible, how can we account for that irresistible instinct in our hearts which leads us towards unity whenever and in whatever direction our passions are stirred? A sense of the universe, a sense of the All, the nostalgia which seizes us when confronted by nature, beauty, music—these seem to be an expectation and awareness of a Great Presence. The "mystics" and their commentators apart, how has psychology been able so consistently to ignore this fundamental vibration whose ring can be heard by every practised ear at the basis, or rather at the summit, of every great emotion? Resonance to the All—the keynote of pure poetry and pure religion. Once again: what does this phenomenon, which is born with thought and grows with it, reveal if not a deep accord between two realities which seek each other; the severed particle which trembles at the approach of "the rest"?12

Speaking of the intellect, he says: "It may well be that in its individual capacities and penetrations our brain has reached its organic limits. But the movement does not stop there. From west to east, evolution is henceforth occupied elsewhere, in a richer and more com-

plex domain, constructing, with all minds joined together, mind. Beyond all nations and races, the inevitable taking-as-a-whole of mankind has already begun.”¹³

Here, obviously, he is speaking of the evolution of a world culture. At this point a footnote takes us back to a quotation from the biochemist J. B. S. Haldane: “Now, if the co-operation of some thousands of millions of cells in our brain can produce our consciousness, the idea becomes vastly more plausible that the co-operation of humanity, or some sections of it, may determine what Comte calls a Great Being.”¹⁴

Père Teilhard's Omega Point is a cultural concept, a world in which the *minds of men* have attained a common language of scientific humanism, just as long ago the *genes of men* were encompassed in a common gene pool, as a single species. Just as the genes form “a membrane that stretches over all the earth,” so the minds of men, he believes, will form a continuous network of communication around the world. Père Teilhard's Omega Point is thus the birth of a new God or Great Being in the form of a world culture, and it is only in his Epilogue that he equates the Omega Point with the already existing Christian God.¹⁵ But earlier he had said:

The truth is that, as children of a transition period, we are neither fully conscious of, nor in full control of, the new powers that have been unleashed. Clinging to outworn habit, we still see in science only a new means of providing more easily the same old things. We put Pegasus in harness. And Pegasus languishes—unless he bolts with the band-wagon! But the moment will come—it is bound to—when man will be forced by the disparity of the equipage to admit that science is not an accessory occupation for him but an essential activity, a natural derivative of the overspill of energy constantly liberated by mechanisation.

We can envisage a world whose constantly increasing “leisure” and heightened interest would find vital issue in fathoming everything, trying everything, extending everything; a world in which giant telescopes and atom smashers would absorb more money and excite more spontaneous admiration than all the bombs and cannons put together; a world in which, not only for the restricted band of paid research-workers, but also for the man in the street, the day's ideal would be the wresting of another secret or another force from corpuscles, stars, or organised matter; a world in which, as happens already, one gives one's life to be and to know, rather than to possess. That, on an estimate of the forces engaged, is what is being relentlessly prepared around us.¹⁶

Later we read: “In short, as soon as science outgrows the analytic investigations which constitute its lower and preliminary stages, and passes on to synthesis—synthesis which naturally culminates in the realisation of some superior state of humanity—it is at once led to

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forsee and place its stakes on the *future* and on the *all*. And with that it out-distances itself and emerges in terms of *option* and *adoration*"¹⁷ And finally: "But there is another possibility. Obeying a law from which nothing in the past has ever been exempt, evil may go on growing alongside good, and it too may attain its paroxysm at the end in some specifically new form. 'There are no summits without abysses.'"¹⁸

That is the message of Teilhard de Chardin as I see it. As for me, I care not whether the message is scientifically provable, and I do not have to agree with the underlying theme that progress is built into the stuff of life, but I do agree that we should try to build it into our culture. I believe that Père Teilhard would accept the modern views of the origin and nature of life as spontaneous and operating in terms of the laws of chance, supervised and censored by natural selection. I doubt that he would be classified as a vitalist, and I think that like me he would be a mechanist if he were aware of the fact that the only way a living organism can incorporate purpose into its mechanism is by the random development and ordered selection of feedback mechanisms, because these are the only ways the body machine can be made to work.

Now it is my conviction that men's souls are products of their culture and that cultural evolution is in part analogous to biological evolution. The unit idea or concept in cultural evolution is analogous to the unit DNA molecule in biological evolution, and the emphasis of modern thought is that progress is based entirely on copy errors and hindsight, which is pretty unromantic compared with the ideas of Père Teilhard. But the essential message of Père Teilhard is this: "In short, as soon as science outgrows the analytic investigations which constitute its lower and preliminary stages, and passes on to synthesis—synthesis which naturally culminates in the realisation of some superior state of humanity—it is at once led to foresee and place its stakes on the *future* and on the *all*. And with that it out-distances itself and emerges in terms of *option* and *adoration*."¹⁰ By option he means decision making and choice (the verb is *to opt*), and by adoration he means enthusiasm, which stems from the Greek *en theos*, or *in God*.

THE CYBERNETICS OF HUMAN VALUES

In order to understand purpose as seen by Père Teilhard, I propose to describe man as an information-processing, decision-making, cybernetic machine whose value systems are built up by feedback proc-

esses from his environment. These feedback processes are built into the most primitive forms of life, and they form a continuous spectrum all the way back through prehistory and to times when no life existed. Throughout this whole development of man's history, coming up through biological evolution and extending into cultural evolution, the essential message is one in which disorder, or randomness, is used to generate novelty, and natural selection then generates order. Natural selection is the method by which survival information from the environment can be stored in the genome in the course of biological evolution and stored in the culture in the course of cultural evolution. Anthropologist Clifford Geertz has beautifully described how dependent we are on our culture in order to exist at all.²⁰ According to Geertz, "culture is a set of control mechanisms for governing behavior and . . . man is precisely the animal most desperately dependent on such extragenetic control mechanisms for ordering his behavior."

If we look at the human cybernetic machine more closely we can see that it is an information-processing device with a built-in normal tendency to make some copy errors (say, 0.01 per cent to 1.0 per cent) in the course of information processing, and this is the source of creativity, controlled in each individual case by the previously mentioned feedback from the environment at the moment or from memory storage of previous experiences coming from contacts with the environment. The normal tendency to generate novelty in the course of information processing varies from one individual to another and is based in the genome of the individual, although it may vary also in the same individual depending upon the environmental conditions in the individual's history, and indeed it can be cultivated and modulated. But, at the opposite pole, mental disease must be looked upon both in terms of hereditary capabilities and in terms of environmental history, as uncontrolled modulation of reality.

The normal tendency to make copy errors is genetically based, but it is also strongly affected by the complexity of the information input as well as the rate at which information is presented, in other words, the information load. The concept of information load, or overload, or underload, has no meaning except in terms of the obligation of the individual to make decisions and carry out actions that involve choices based on the interactions between the incoming information and the previously stored information and beliefs. Peyton Rous, 1966 Nobel Prize winner, once said, "Beliefs are important because what men believe determines what men do." Every action is governed by

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feedback mechanisms in which the action is designed to close the gap between what the human cybernetic machine is doing and what it believes it should do. In other words, feedback mechanisms always involve comparison of a reading of an action and a comparison of the reading with a pre-set standard. This standard may be set by beliefs and tends to shift with time, but the man machine is always trying to close the gap between the actual performance and the standard.

Now the maximum rate of information processing coupled to action might be limited by the input, by the transduction and integration, or by the mechanical response, but experiments seem to show clearly that the rate-limiting step is not at the input or the output, but at the central nervous system, where the transduction and integration takes place. And it has also been shown that there is a maximum rate for each individual, depending on the complexity, and that when this rate of input is exceeded, the individual becomes overloaded and begins to make errors or fails to respond completely. I am referring to studies by Dr. James G. Miller, recently of the Mental Health Research Institute, University of Michigan.²¹ Tests have shown that certain individuals classed as schizophrenic make errors at normal speeds in the way that normal people make errors at high speeds of input, that is, they make certain types of errors habitually. It appears that the capabilities involve inherent genetic properties as well as previous experience.

This concept of man as an information-processing, cybernetic machine bears an important relationship to cultural evolution, which is really what Père Teilhard was talking about, because a culture can provide a person with a stereotyped decision to fit a particular situation and relieve him of the danger of information overload. Cultures can be examined in terms of whether they decrease or increase the amount of information that individual members of the society have to process. And I would say that one of the dilemmas of our modern society is that people are confronted with more information and decisions in some areas than they can process. In other areas, they have information underloads, as for example in a production-line job, where no choice except the right one is permitted, and this repetitively.

THE ROLE OF KNOWLEDGE, IGNORANCE, AND NATURAL SELECTION IN FURTHER EVOLUTION OF VALUES

It seems that a reasonable way to build a value system would be to

set up as a minimal requirement the survival of the human species under conditions that would permit further evolution and delay extinction. For, if we admit with Père Teilhard that we do not now live in an ideal society and that we cannot change it overnight, we must agree that we have to have time to decide what kind of a society we want and what steps we must take to secure it.

But if this is what we decide, we have already made a value judgment, because there are many in the world who believe that we already have all the information that we need to build a perfect society and that for man to attempt to manipulate his destiny is contrary to some kind of natural law. Père Teilhard on the other hand, felt that this is the natural law and that man must assume control of his destiny and must reach some kind of agreement on the ground rules for such an attempt. I agree with him. The choice between these polar views ("we know" versus "we don't know") probably cannot be resolved at once. But those who feel that man must take charge of his own destiny should identify themselves and clearly expound the basis of their views and the consequences of them; otherwise, there is little opportunity for those who hold opposite views to undergo the transformation that natural selection of ideas would bring about if all ideas were equally available.

If we agree that our environment is changing, and changing rapidly, then we must agree that we do not now possess all the information that we need to build a future society. We must ask what we can do to gain a better idea of how to predict the nature of the future problems that we will have to deal with.

SUMMATION

The issue between Père Teilhard and all other evolutionists, including me, is that he believes that the growing tip of evolution, that is, man, can know where it is going and how to get there. He believes that by science plus inductive leaps based on Christian faith, the one true way can be found. He fails to specify clearly that he is really talking about cultural evolution and is not really supposing that biological evolution will achieve the desired end. Because he does not make this distinction, he sounds somewhat like a neo-Lamarckian, which is a view that we are all convinced is not tenable for biological evolution.

I believe, along with other contemporary evolutionists, that the ultimate destiny of the human race is unknown and cannot be predicted and that no path can be said to be assured of success. All we

can hope to do is to keep the pathway open-ended and to permit several courses to be followed.

But we would agree with Père Teilhard that the problem of man's future is now a legitimate topic for discussion.

NOTES

1. Teilhard de Chardin, *The Phenomenon of Man* (New York: Harper & Row, 1959), and *The Future of Man* (New York: Harper & Row, 1964).
2. George Gaylord Simpson, "The World into Which Darwin Led Us," *Science*, CXXXI (1960), 966-74.
3. Ernst Mayr, "Origin of the Human Races" (review of Carleton Coon's *The Origin of Races*), *Science* CXXXVIII (1962), 420-22; "Cause and Effect in Biology," *Science*, CXXXIV (1961), 1501-6 (see also the letters in response to this article, in *Science*, CXXXV [1962], 972-81); and "Accident or Design: The Paradox of Evolution in the Evolution of Living Things," a paper presented at the Royal Society of Victoria, in Melbourne, Australia, in December, 1959. See also T. Dobzhansky, *Man-kind Evolving* (New Haven, Conn.: Yale University Press, 1962).
4. *Time*, June 29, 1962, pp. 53-54.
5. *The Phenomenon of Man*, p. 217.
6. *Ibid.*, p. 241.
7. See n. 3 above.
8. *The Phenomenon of Man*, p. 249.
9. See my article entitled "Society and Science," in *Science*, CXLVI (November 20, 1964), 1018-22.
10. *The Phenomenon of Man*, p. 267.
11. *Ibid.*, p. 265.
12. *Ibid.*, p. 266.
13. *Ibid.*, p. 277.
14. *Ibid.*, p. 57.
15. *Ibid.*, p. 291.
16. *Ibid.*, p. 279.
17. *Ibid.*, p. 284.
18. *Ibid.*, p. 288.
19. *Ibid.*, p. 284.
20. V. R. Potter, "Man and His Future," book review in *Science*, CLIV (October 21, 1966), 273-74.
21. James G. Miller, "Adjusting to Overloads of Information," in *Disorders of Communication* ("Research Publications of the Association for Research in Nervous and Mental Disease," No. XLII), pp. 87-100 (1964); "Psychological Aspects of Communication Overloads," in R. W. Waggoner and D. J. Carek (eds.), *International Psychiatric Clinics: Communication in Clinical Practice* (Boston: Little, Brown & Co., 1964); "The Individual as an Information Processing System," in W. S. Fields and W. Abbott (eds.), *Information Storage and Neural Control* (Springfield, Ill.: Charles C. Thomas, 1963).