

The Ecozoic Era

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The changes presently taking place in human and earthly affairs are beyond any parallel with historical change or cultural modification as these have occurred in the past. This is not like the transition from the classical period to the medieval period or from the medieval to the modern period. These changes reach far beyond the civilizational process, beyond even the human process, into the biosystems and even the geological structures of the Earth itself.

There are only two other moments in the history of this planet that offer us some sense of what is happening. These two moments are the end of the Paleozoic Era 220 million years ago, when some 90 percent of all species living at that time were extinguished, and the terminal phase of the Mesozoic Era sixty-five million years ago, when there was also very extensive extinction.

Then, in the emerging Cenozoic Era the story of life on this planet flowed over into what could be called the lyric period of Earth history. The trees had come before this, the mammals already existed in a rudimentary form, the flowers had appeared perhaps thirty million years earlier. But in the Cenozoic Era, there was wave upon wave of life development, with the flowers, the birds, the trees, and the mammalian species particularly all leading to that luxuriant display of life upon Earth such as we have known it.

In more recent times, during the past million years this region of New England went through its different phases of glaciation, also its various phases of life development. New England's trees especially developed a unique grandeur. Possibly no other place on Earth has such color in its fall foliage as this region. It was all worked out during these past sixty-five million years. The songbirds we hear also came about in this long period.

Then we, the human inhabitants of the Earth, came into this region with all the ambivalences we bring with us. Not only here but throughout the planet we have become a profoundly disturbing presence. In this region and to the north in southern Quebec, the native maple trees are dying out in great numbers due to pollutants we have put into the atmosphere, the soil, and the water.

Their demise is largely a result of the carbon compounds we have loosed into the atmosphere through the use of fossil fuels, especially of petroleum, for our fuel and energy. Carbon is, as you know, the magical element. The whole life structure of the planet is based upon the element carbon. So long as the life process is guided by its natural patterns, the integral functioning of the Earth takes place. The wonderful variety expressed in marine life and land life, the splendor of the flowers and the birds and animals—all these could expand in their gorgeous coloration, in their fantastic forms, in their dancing movements, and in their songs and calls that echo over the world.

To accomplish all this, however, nature must find a way of storing immense quantities of carbon in the petroleum and coal deposits, also in the great forests. This process was worked out over some hundreds of millions of years. A balance was achieved, and the life systems of the planet were secure in the interaction of the air and the water and the soil with the inflowing energy from the sun.

But then we discovered that petroleum could produce such wonderful effects. It can be made into fertilizer to nourish crops; it can be spun into fabrics; it can fuel our internal combustion engines for transportation over the vast highway system we have built; it can produce an unlimited variety of plastic implements; it can run gigantic generators and produce power for lighting and heating of our buildings.

It was all so simple. We had no awareness of the deadly consequences that would result from the residue from our use of petroleum for all these purposes. Nor did we know how profoundly we would affect the

organisms in the soil with our insistence that the patterns of plant growth be governed by artificial human demands met by petroleum-based fertilizers rather than by the spontaneous rhythms within the living world. Nor did we understand that biological systems are not that adaptable to the mechanistic processes we imposed upon them.

I do not wish to dwell on the devastation we have brought upon the Earth but only to make sure we understand the nature and the extent of what is happening. While we seem to be achieving magnificent things at the microphase level of our functioning, we are devastating the entire range of living beings at the macrophase level. The natural world is more sensitive than we have realized. Unaware of what we have done or its order of magnitude, we have thought our achievements to be of enormous benefit for the human process, but we now find that by disturbing the biosystems of the planet at the most basic level of their functioning we have endangered all that makes the planet Earth a suitable place for the integral development of human life itself.

Our problems are primarily problems of macrophase biology. Macrophase biology, the integral functioning of the entire complex of biosystems of the planet, is something biologists have given almost no attention. Only with James Lovelock and some other more recent scientists have we even begun to think about this larger scale of life functioning. The delay is not surprising, for we are caught in the microphase dimensions of every phase of our human endeavor. This is true in law and medicine and in the other professions as well as in biology.

Macrophase biology is concerned with five basic spheres: land, water, air, life—and how these interact with one another to enable the planet Earth to be what it is—and a very powerful sphere: the human mind. Consciousness is certainly not limited to humans. Every living being has its own mode of consciousness. We must be aware, however, that consciousness is an analogous concept. It is qualitatively different in its various modes of expression. Consciousness can be regarded as the capacity for intimate presence of things to one another through knowledge and sensitive identity. But obviously the consciousness of a plant and the consciousness of an animal are qualitatively different, as are the consciousness of insects and the consciousness of birds or fish. Similarly, there is a difference in consciousness between fish and human: for the purposes of the fish, human modes of consciousness would be more a defect than an advantage. So too, tiger consciousness would be inappropriate for the bird.

It is also clear that the human mode of consciousness is capable of unique intrusion into the larger functioning of the planetary life systems. So powerful is this intrusion that the human has established an additional sphere that might be referred to as a technosphere, a way of controlling the functioning of the planet for the benefit of the human at the expense of the other modes of being. We might even consider that the technosphere in its subservience to industrial-commercial uses has become incompatible with the other spheres that constitute the basic functional context of the planet.

The biggest single question before us in the 1990s is the extent to which this technological-industrial-commercial context of human functioning can be made compatible with the integral functioning of the other life systems of the planet. We are reluctant to think of our activities as inherently incompatible with the integral functioning of the various components of the planetary systems. It is not simply a matter of altering our ways of acting on a minor scale by recycling (which presupposes a cycling that is devastating in its original form), by mitigating pollution, reducing our energy consumption, limiting our use of the automobile, or by fewer development projects. Our efforts will be in vain if our purpose is to make the present industrial system acceptable. These steps must be taken, but according to my definition of the Ecozoic Era there must be more: there must also be a new era in human-Earth relations.

Our present system, based on the plundering of the Earth's resources, is certainly coming to an end. It cannot continue. The industrial world on a global scale, as it functions presently, can be considered definitively bankrupt. There is no way out of the present recession within the context of our existing

commercial-industrial processes. This recession is not only a financial recession or a human recession even. It is a recession of the planet itself. The Earth cannot sustain such an industrial system or its devastating technologies. In the future the industrial system will have its moments of apparent recovery, but these will be minor and momentary. The larger movement is toward dissolution. The impact of our present technologies is beyond what the Earth can endure.

Nature has its own technologies. The entire hydrological cycle can even be regarded as a huge engineering project, a project vastly greater than anything humans could devise with such beneficent consequences throughout the life systems of the planet. We can differentiate between an acceptable human technology and an unacceptable human technology quite simply: an acceptable one is compatible with the integral functioning of the technologies governing the natural systems; an unacceptable one is incompatible with the technologies of the natural world.

The error has been to think that we could distort the natural processes for some immediate human benefit without incurring immense penalties, penalties that might eventually endanger the well-being of the human as well as that of most other life forms. This is what has happened in the twentieth-century petroleum economy we have developed.

The petroleum at the base of our present industrial establishment might at its present rate of use last another fifty years—probably less, possibly more. But a severe depletion will occur within the lifetime of young people living today. The major part of the petroleum will be gone. Our youngest children may see the end of it. They will likely see also the tragic climax of the population expansion. And with the number of automobiles on the planet estimated at six hundred million in the year 2000, we will be approaching another saturation level in the technological intrusion into the planetary process.

It is awesome to consider how quickly events of such catastrophic proportions are happening. When I was born in 1914, there were only one and a half billion people in the world. Children of the present will likely live to see ten billion. The petrochemical age had hardly begun in my early decades. Now the planet is saturated with the residue from spent oil products. There were fewer than a million automobiles in the world when I was born. In my childhood the tropical rain forests were substantially intact; now they are devastated on an immense scale. The biological diversity of life forms was not yet threatened on an extensive scale. The ozone layer was still intact.

In evaluating our present situation I submit that we have already terminated the Cenozoic Era of the geological systems of the planet. Sixty-five million years of life development are terminated. Extinction is taking place throughout the life systems on a scale unequaled since the terminal phase of the Mesozoic Era.

A renewal of life in some creative context requires that a new biological period come into being, a period when humans would dwell upon the Earth in a mutually enhancing manner. This new mode of being of the planet I describe as the Ecozoic Era, the fourth in the succession of life eras thus far identified as the Paleozoic, the Mesozoic, and the Cenozoic. But when we propose that an Ecozoic Era is succeeding the Cenozoic, we must define the unique character of this emergent era.

I suggest the name "Ecozoic" as a better designation than "Ecological." Eco-logos refers to an understanding of the interaction of things. Eco-zoic is a more biological term that can be used to indicate the integral functioning of life systems in their mutually enhancing relations.

The Ecozoic Era can be brought into being only by the integral life community itself. If other periods have been designated by such names as "Reptilian" or "Mammalian," this Ecozoic period must be identified as the Era of the Integral Life Community. For this to emerge there are special conditions required on the part of the human, for although this era cannot be an anthropocentric life period, it can come into being only under certain conditions that dominantly concern human understanding, choice, and action.

When we consider the conditions required of humans for the emergence of such an Ecozoic Era in Earth history, we might list these as follows:

The first condition is to understand that the universe is a communion of subjects, not a collection of objects. Every being has its own inner form, its own spontaneity, its own voice, its ability to declare itself and to be present to other components of the universe in a subject-to-subject relationship. Whereas this is true of every being in the universe, it is especially true of each component member of the Earth community. Each component of the Earth is integral with every other component. This is also true of the living beings of the Earth in their relations with one another.

The termination of the Cenozoic Era of Earth history has been brought about by the incapacity of humans in the industrial cultures to be present to the Earth and its various modes of being in some intimate fashion. Ever since the time of Descartes in the first half of the seventeenth century, Western humans, in their dominant life attitudes, have been autistic in relation to the non-human components of the planet. Whatever the abuse of the natural world by humans prior to that time, the living world was recognized until then in its proper biological functioning as having an "anima," a soul. Every living being was by definition an ensouled being, with a voice that spoke to the depths of the human of wondrous and divine mysteries, a voice that was heard quite clearly by the poets and musicians and scientists and philosophers and mystics of the world, a voice heard also with special sensitivity by the children.

Descartes, we might say, killed the Earth and all its living beings. For him the natural world was mechanism. There was no possibility of entering into a communion relationship. Western humans became autistic in relation to the surrounding world. There could be no communion with the birds or animals or plants, because these were all mechanical contrivances. The real value of things was reduced to their economic value. A destructive anthropocentrism came into being.

This situation can be remedied only by a new mode of mutual presence between the human and the natural world, with its plants and animals of both the sea and the land. If we do not get that straight, then we cannot expect any significant remedy for the present distress experienced throughout the Earth. This capacity for intimate rapport also needs to be extended to the atmospheric phenomena and the geological structures and their functioning.

Because of this autism my generation never heard the voices of that vast multitude of inhabitants of the planet. They had no communion with the non-human world. They would go to the seashore or to the mountains for some recreation, a moment of aesthetic joy. But this was too superficial to establish any true reverence or intimate rapport. No sensitivity was shown to the powers inherent in the various phenomena of the natural world, no depth of awe that would have restrained their assault on the natural world in order to extract from it some human advantage—even if this meant tearing to pieces the entire fabric of the planet.

The second condition for entering the Ecozoic Era is a realization that the Earth exists, and can survive, only in its integral functioning. It cannot survive in fragments any more than any organism can survive in fragments. Yet the earth is not a global sameness. It is a differentiated unity and must be sustained in the integrity and interrelations of its many bioregional contexts. This inner coherence of natural systems requires an immediacy of any human settlement with the life dynamics of the region. Within this region the human right to habitat must respect the right to habitat possessed by the other members of the life community. Only the full complex of life expression can sustain the vigor of any bioregion.

A third condition for entering the Ecozoic Era is recognition that the Earth is a one-time endowment. We do not know the quantum of energy contained in the Earth, its possibilities or its limitations. We must reasonably suppose that the Earth is subject to irreversible damage in the major patterns of its functioning and even to distortions in its possibilities of development. Although there was survival and further development after the great extinctions at the end of the Paleozoic and the Mesozoic Eras, life was not so

highly developed as it is now. Nor were the very conditions of life at those times negated by such changes as we have wrought through our toxification of the planet.

Life on Earth will surely survive the present decline of the Cenozoic, but we do not know at what level of its development. The single-cell life forms, the insects, the rodents, the plants, and a host of other forms of life found throughout the planet—these will surely survive. But the severity of the damage to the rain forests, to the fertility of the soils, to species diversity, and to the chances for survival of the more developed animals, the consequences throughout the animal world of the diminishment of the ozone shield, the extension of deserts, the pollution of the great freshwater lakes, the chemical imbalance of the atmosphere—all are signs of disturbance on a scale that might make restoration to their earlier grandeur impossible, certainly within any time frame that is conceivable to human modes of thinking or planning. Almost certainly we have witnessed in these past centuries a grand climax in the florescence of the Earth.

A fourth condition for entering the Ecozoic Era is a realization that the Earth is primary and humans are derivative. The present distorted view is that humans are primary and the Earth and its integral functioning only a secondary consideration—thus the pathology manifest in our various human institutions. The only acceptable way for humans to function effectively is by giving first consideration to the Earth community and then dealing with humans as integral members of that community. The Earth must become the primary concern of every human institution, profession, program, and activity, including economics. In economics the first consideration cannot be the human economy, because the human economy does not even exist prior to the Earth economy. Only if the Earth economy is functioning in some integral manner can the human economy be in any way effective. The Earth economy can survive the loss of its human component, but there is no way for the human economy to survive or prosper apart from the Earth economy. The absurdity has been to seek a rising Gross National Product in the face of a declining Gross Earth Product.

This primacy of the Earth community applies also to medicine and law and all the other activities of humans. It should be especially clear in medicine that we cannot have well humans on a sick planet. Medicine must first turn its attention to protecting the health and well-being of the Earth before there can be any effective human health. So in jurisprudence, to poise the entire administration of justice on the rights of humans and their limitless freedom to exploit the natural world is to open the natural world to the worst predatory instincts of humans. The prior rights of the entire Earth community need to be assured first; then the rights and freedoms of humans can have their field of expression.

A fifth condition for the rise of the Ecozoic Era is to realize that there is a single Earth community. There is no such thing as a human community in any manner separate from the Earth community. The human community and the natural world will go into the future as a single integral community or we will both experience disaster on the way. However differentiated in its modes of expression, there is only one Earth community—one economic order, one health system, one moral order, one world of the sacred.

As I present this outline of an emerging Ecozoic Era, I am quite aware that such a conception of the future, when humans would be present to the Earth in a mutually enhancing manner, is mythic in its form, just as such conceptions as the Paleozoic, Mesozoic, and Cenozoic are mythic modes of understanding a continuing process, even though this continuing process is marked by an indefinite number of discontinuities amid the continuity of the process itself.

My effort here is to articulate the outlines of a new mythic form that would evoke a creative entrancement to succeed the destructive entrancement that has taken possession of the Western soul in recent centuries. We can counter one entrancement only with another, a counter-entrancement. Only thus can we evoke the vision as well as the psychic energies needed to enable the Earth community to enter successfully upon its next great creative phase. The grandeur of the possibilities ahead of us must in some manner be experienced in anticipation. Otherwise we will not have the psychic energy to endure the pain of the required transformation.

Once we are sufficiently clear as to where we are headed and once we experience the urgency and the adventure of what we are about, we can get on with our historic task. We can accept and even ignore the difficulties to be resolved and the pain to be endured, for we are involved in a great work. In creating such a great work, the incidentals fall away. We can accept the pathos of our times, the sorrow that we will necessarily go through. We can, I think, assist the next generation as they take up this creative effort, mainly by indicating just where they can receive their instructions. It is the role of elders at the present time to assist them in fulfilling their role in this moment of transformation. Elders. We have a lot of older people but few elders. Tribal people, for their part, depend on elders for their instructions. I was privileged to see this process at work some years ago when I was invited to participate at a meeting of indigenous Indian peoples—mostly Ojibwa, Cree, and Six Nations—on Cape Croker along Georgian Bay in northwest Ontario. The purpose of the meeting was to consider the future and the direction their lives should take.

I hope we will be able to guide and inspire our next generation as they attempt to shape the future. Otherwise they will simply survive with all their resentments amid the destroyed infrastructures of the industrial world and amid the ruins of the natural world itself. The challenge itself is already predetermined. There is no way for the new generation to escape this confrontation. The task to which they are called and the destiny that is before them are, however, not simply theirs alone. The human is linked to every earthly being, to the entire planet. The whole universe is involved. The successful emergence of the Eozoic Era can presently be considered the great creative task of the universe itself.

This destiny can be understood, however, only in the context of the Great Story of the universe. All peoples derive their understanding of themselves from their account of how the universe originally came into being, how it came to be as it is, and the role of the human in the story. We in our Euro-American traditions have in recent centuries, through our observational studies, created a new story of the universe. The difficulty is that this story was presented in the context of the mechanistic way of thinking about the world and so has been devoid of meaning. Supposedly, everything has happened in a random, meaningless process.

It is little wonder, then, that we have lost our Great Story. Our earlier Genesis story long ago lost its power over our historical cultural development. Our new scientific story has never carried any depth of meaning. We have lost our reverence for the universe and the entire range of natural phenomena.

Our scientific story of the universe has no connection with the natural world as we experience it in the wind and the rain and the clouds, in the birds, the animals, and the insects we observe around us. For the first time in all of human history the sun and moon and stars, the fields and mountains and streams and woodlands fail to evoke a sense of reverence before the deep mystery of things. These wondrous components of the natural world are somehow not seen with any depth of appreciation. Perhaps that is why our presence has become so deadly.

But now all this is suddenly being altered. Shocked by the devastation we have caused, we are awakening to the wonder of a universe never before seen in quite the same manner. No one ever before could tell in such lyric language as we can now the story of the primordial flaring forth of the universe at the beginning, the shaping of the immense number of stars gathered into galaxies, the collapse of the first generation of stars to create the ninety-some elements, the gravitational gathering of scattered stardust into our solar system with its nine planets, the formation of the Earth with its seas and atmosphere and the continents crashing and rifting as they move over the asthenosphere, and the awakening of life.

Such a marvel is this fifteen billion year process; such infinite numbers of stars in the heavens and living beings on Earth, such limitless variety of flowering species and forms of animal life, such tropical luxuriance, such magnificent scenery in the mountains, and such springtime wonders as occur each year. Now we are experiencing the pathos of witnessing the desecration of this sublimity.

We now need to tell this story, meditate on it, and listen to it as it is told by every breeze that blows, by every cloud in the sky, by every mountain and river and woodland, and by the song of every cricket. We have lost contact with our story. Yet we can come together, all the peoples of Earth and all the various members of the great Earth community, only in this Great Story, the story of the universe. For there is no human community without the human community story, no Earth community without the Earth story, and no universe community without the universe story. These three constitute the Great Story. Without it the various forces of the planet become mutually destructive rather than mutually coherent.

We need to listen to one another's way of telling the Great Story. But first we in the West, with our newly developed capacity to observe the universe through our vast telescopes and to hear its sounds as these come to us from the beginning of time and over some billions of years, need really to listen as our own special way of understanding and participating in the Great Story.

Whenever we forget our story we become confused. But the winds and the rivers and the mountains never become confused. We must go to them constantly to be reminded of it, for every being in the universe is what it is only through its participation in the story. We are resensitized whenever we listen to what they are telling us. Long ago they told us that we must be guided by a reverence and a restraint in our relations with the larger community of life, that we must respect the powers of the surrounding universe, that only through a sensitive insertion of ourselves into the great celebration of the Earth community can we expect the support of the Earth community. If we violate the integrity of this community, we will die.

The natural world is vast and its lessons fearsome. One of the most ominous expressions of the natural world has to do with nuclear energy. When we go deep into the natural world and penetrate the inner structure of the atom and in a sense violate that deepest mystery for trivial or destructive purposes, we may get power, but nature throws at us its most deadly consequences. We are still helpless with regard to what to do once we have broken into the mysterious recesses of nuclear power. Forces have been let loose far beyond anything we can manage.

Earlier I mentioned five conditions for the integral emergence of the Ecozoic Era. Here I would continue with a sixth condition: that we understand fully and respond effectively to our own human role in this new era. For while the Cenozoic Era unfolded in its full splendor entirely apart from any role fulfilled by the human, almost nothing of major significance is likely to happen in the Ecozoic Era that humans will not be involved in. The entire pattern of Earth's functioning is being altered in this transition from the Cenozoic to the Ecozoic. We did not even exist until the major developments of the Cenozoic were complete. In the Ecozoic, however, the human will have a pervasive influence on almost everything that happens. We are approaching a critical watershed in the entire modality of Earth's functioning. Our positive power of creativity in the natural life systems is minimal; our power of negating is immense. Whereas we cannot make a blade of grass, there is liable not to be a blade of grass unless it is accepted, fostered, and protected by the human. Protected mainly from ourselves so that the Earth can function from within its own dynamism.

There is, finally, the question of language. A new language, an Ecozoic language, is needed. Our late Cenozoic language is radically inadequate. The human mode of being is captured and destroyed by our present univalent, scientific, literal, unimaginative language. We need a multivalent language, one much richer in the symbolic meanings that language carried in its earlier forms when the human lived deep within the natural world and the entire range of Earth phenomena. As we recover this early experience in the emerging Ecozoic Era, all the archetypes of the collective unconscious will attain a new validity as well as new patterns of functioning, especially in our understanding of the death-rebirth symbol and the symbols of the heroic journey, the Great Mother, the tree of life.

Every reality in the natural world is multivalent. Nothing is univalent. Everything has a multitude of aspects and meanings, the way sunlight carries within itself warmth and light and energy. Sunlight is not a

single thing. It awakens the multitude of living forms in the springtime; it awakens poetry in the soul and evokes a sense of the divine. It is mercy and healing, affliction and death. Sunlight is irreducible to any scientific equation or any literal description.

But all these meanings are based on the physical experience of sunlight. If we were deprived of sunlight, the entire visible world would be lost to us and eventually immense realms of consciousness and all of life. We would be retarded in our inner development in proportion to our deprivation of the experience of natural phenomena, of mountains and rivers and forests and seacoasts and all their living inhabitants. The natural world itself is our primary language as it is our primary scripture, our primary awakening to the mysteries of existence. We might well put all our written scriptures on the shelf for twenty years until we learn what we are being told by unmediated experience of the world about us.

So too we might put Webster on the shelf until we revise the language of all our professions, especially law, medicine, and education. In ethics we need new words such as biocide and geocide, words that have not yet been adopted into the language. In law we need to define society in terms that include the larger community of living beings of the bioregion, of the Earth, and even of the universe. Certainly human society separated from such contexts is an abstraction. Life, liberty, habitat, and the pursuit of happiness are rights that should be granted to every living creature, each in accord with its own mode of being.

I might conclude with a reference to the Exodus symbol, which has exercised such great power over our Western civilization. Many peoples came to this country believing they were leaving a land of oppression and going to a land of liberation. We have always had a sense of transition. Progress supposedly is taking us from an undesirable situation to a kind of beatitude. So we might think of the transition from the terminal Cenozoic to the emerging Ecozoic as a kind of Exodus out of a period when humans are devastating the planet to a period when humans will begin to live on the Earth in a mutually enhancing manner.

There is a vast difference, however, in the case of this present transition, which is one not simply of the human but of the entire planet—its land, its air, its water, its biosystems, its human communities. This Exodus is a journey of the Earth entire. It is my hope that we will make the transition successfully. Whatever the future holds for us, however, it will be an experience shared by humans and every other earthly being. There is only one community, one destiny.