
The Gaia Theory: Its Religious Implications

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In our discussion of the Gaia Theory there is need, it seems, for a cosmology of Gaia as well as a biology of Gaia for, ultimately, everything in the universe finds its context of interpretation within the universe. Within the phenomenal world, only the universe itself is a self-referent, a text without context. This cosmology of Gaia is especially necessary as a context for any religious interpretation of our subject. Religious experience itself seems to emerge out of the wonder that strikes the human mind as it experiences the inexplicable grandeur of the natural world about us.

What do we see when we look at the Earth? A radiant blue-white planet. Seven continents in the midst of the great world ocean. The polar regions, vast stretches of snow and ice. The Sierras along the western edge of the Americas, the Alps in Europe, the Himalayas in Nepal, the T'ien Shan in China, Kilimanjaro in Africa. The Amazon, the Nile, the Mississippi, the Yangtze; rivers flowing down from the mountains across the continents into the sea. Rainforests girdle the planet in its equatorial regions. An awesome experience whether we look down from the heavens or across the landscape and up at the sky with its sun and clouds by day and its moon and stars at night.

We seldom think about the Earth itself in its distinctive aspects; we are enclosed so intimately within its fields and woodlands or lost amid the commercial frenzy of our cities. We speak in broad inclusive terms about nature, the world, creation, the environment, the universe, even when the planet Earth, in its limited and distinctive aspects, is foremost in our thought. The Earth in its full spherical contours was never experienced by us directly until recent times.

Recently we have come to know the Earth within the context of a more comprehensive knowledge of the universe itself. Through our observational sciences, we are beginning to understand something of how the Earth was born out of the larger processes of the universe, how life appeared, and finally how we ourselves emerge into being. But if we have such scientific knowledge, we are often lacking in any deep feeling for the mystique of the Earth or any depth understanding.

Even so, we still are profoundly affected by the variety of moods that come over us as the natural world invades our consciousness in its more quiet as well as its more dramatic moments. The entire range of our poetry and music and art resonate with the deep mysteries of existence experienced in the world about us. We cannot go unmoved in the depth of our being by the serenity of the sea on a quiet evening or by the terrifying wintry storms that sweep across the North Atlantic. There is the stabbing pain that we feel as we stand on some mountain height and look out over the distant hills about us.

A Lost Intimacy

We have difficulty, however, with this sense of mystery because we no longer understand the voices speaking to us from the surrounding world. Our intense scientific preoccupations along with our relentless commercial exploitation of the planet have left us with diminished sensitivity to the natural world in the deeper emotional, aesthetic, mythic and mystical communication it is making to us. Just as autistic persons are enclosed in themselves so tightly that they cannot get out of themselves and nothing and no one else can get in, we are presently so enclosed in our human world that, as a society, we have almost completely lost our intimacy with the natural world.

If, as children, we become literate in human language, we generally remain illiterate in the multitude of languages in the natural world about us. We become socialized in human community while becoming alienated from the larger society of living beings.

Earlier, in the totemic cultures, animals and humans were relatives. The powers of the universe were grandfathers and grandmothers. A pervasive religious rapport with the spirit powers of the natural world was

developed. Ritual enabled humans to enter into the grand liturgy of the universe itself. Seasonal renewal ceremonies brought humans into the rhythms of the solar cycle and the ever-renewing splendour of the Earth. Architectural structures were set on coordinates identified with the position of the heavenly bodies, something we seldom think about anymore.

This was a period of wonder and creativity that was to shape human-Earth relations until our own times. Everything possessed its own life principle, its own distinctive mode of self-expression, its own voice. Humans and animals and plants and all natural phenomena were integral within the larger community. As we are told by Henri Frankfurt in his treatise on *The Intellectual Adventure of Ancient Man*:

The fundamental difference between the attitudes of modern and ancient [hu]man[ity] as regards the surrounding world is this: for modern, scientific [hu]man[ity] the phenomenal world is primarily an 'It'; for ancient—and also for primitive—[hu]man[ity] it is a 'Thou.' The ancients...saw [hu]man[ity] always as part of society, and society as imbedded in nature and dependent upon cosmic forces....Natural phenomena were regularly conceived in terms of human experience and human experience was conceived in terms of cosmic events.

This continuity between the human and the cosmic was experienced also in the Chinese world. Human activities throughout the year were coordinated with the cycle of the seasons. The clothes of the court, the music, the colours, the rituals were all carefully coordinated with the seasons' sequence. If summer music were played in the winter, then the entire natural order was considered to be disrupted. The supreme achievement of the human personality in this context was to experience one's own being as "one body" with "heaven and Earth and the myriad things." In the vast creative processes of the universe the human was "a third along with heaven and Earth" as a primordial force shaping the entire order of things.

The continuity of the human with the natural world in a single sacred community can be appreciated in the experience of Black Elk, the Sioux Indian. When he was nine years old he experienced an elaborate vision culminating in a vast cosmic dance evoked by the song of the black stallion seen in the heavens:

There was nothing that did not hear, and it was more beautiful than anything can be. It was so beautiful that nothing anywhere could keep from dancing. The virgins danced, and all the circled horses. The leaves on the trees, the grasses on the hills and in the valleys, the waters in the creeks and in the rivers and the lakes, the four-legged and the two-legged and the winged of the air—all danced together in the music of the stallion's song.

Issues at this level of concern can be considered ultimately as religious issues. A sense of the sacred dimension of the Earth is involved, a type of awareness that is, apparently, less available from our traditional Western religions. This lack of intimacy with the natural world was further extended when Descartes proposed that the living world was best described as mechanism, for, in his view, there was no vital principle integrating, guiding and sustaining the activities of what we generally refer to as the living world.

A New Sense of the Sacred

Yet, strangely enough, a new sense of the sacred dimension of the universe and of the planet Earth is becoming available from our more recent scientific processes. Our observational sciences, principally through the theories of relativity, quantum physics, the uncertainty principle of Heisenberg, the sense of a self-organizing universe, and the more recent chaos theories have gotten us far beyond the mechanistic understanding of an "objective" world. We know now that there is a subjectivity in all our knowledge; that we ourselves, precisely as intelligent beings, activate one of the deepest dimensions of the universe. Once again we realize that knowledge is less a subject-object relationship than a communion of subjects.

We also begin to appreciate the limitations of the analytical processes of our inquiry into the natural world. If, formerly, we knew by simplistic downward reduction processes that considered the particle as the reality and wholes as derivative, we now recognize that it is even more important that we integrate upward, for we cannot know particles and their power until we see the wholes they bring into being.

If we know carbon simply as one of the ninety-some elements, for example, we have only minimal knowledge of what carbon is. To understand carbon we must see this element in its central role in molecules, megamolecules, in cellular life, organic life, sense life, even in intellectual perception; since carbon in a transformed context lives and functions in the wide display of all the gorgeous plants and animals of the Earth as well as in the most profound intellectual, emotional, and spiritual experiences of the human. There is a latent spiritual capacity in carbon as there is a carbon component in our highest spiritual experience. This we experience within our own being as we become more conscious that the universe process, the Earth process, and the human process constitute a single unbroken sequence of transformations.

While the ancients had much developed higher sensitivities regarding the natural world in its numinous aspects and in its inner spontaneities, we are not without our own resources that, properly appreciated, can lead

to our own mode of intimacy with the natural world. If for a while we lost the poetry of the universe, this loss was significantly changed when the astronauts came home stunned with the immensity and beauty of what they had experienced. Especially overwhelming was their view of the planet Earth from the regions of the moon, almost 200,000 miles distant. A new poetic splendour suddenly appeared in their writings. A poetry that emerged from the Earth itself as well as from the human experience.

The astronaut Edgar Mitchell tells us:

Instead of an intellectual search, there was suddenly a very deep gut feeling that something was different. It occurred when looking at Earth and seeing this blue-and-white planet floating there, and knowing it was orbiting the Sun, seeing that Sun, seeing it set in the background of the very deep black and velvety cosmos, seeing—rather, knowing for sure—that there was a purposefulness of flow, of energy, of time, of space in the cosmos—that it was beyond [our]...rational ability to understand, that suddenly there was a nonrational way of understanding that had been beyond my previous experience.

There seemed to be more to the universe than random, chaotic, purposeless movement of a collection of molecular particles.

On the return trip home, gazing through 240,000 miles of space toward the stars and the planet from which I had come, I suddenly experienced the universe as intelligent, loving, harmonious.

This experience, with all its romanticist overtones, that bursts forth so spontaneously at the apex of our scientific and technological expertise seems to arise out of centuries of long repression, as though this cry of delight had been stifled over these past centuries. That this experience was so widely shared by the other astronauts verifies the validity of the experience. Yet even such a dramatic episode would not be so impressive unless we knew that these men were deeply aware of the extensive scientific knowledge that we have gained of the universe and were speaking not out of simplistic emotion but out of an awareness of the fifteen billion years needed for the universe to bring into being the wonders they were seeing.

This sensitive experience of the universe and of the planet Earth leads us to some appreciation of the ten billion years required for the universe to bring the Earth into existence and another four billion years for the Earth to shape itself in such splendour. For our present Earth is not the Earth as it always was and always will be. It is the Earth at a highly developed phase in its continuing emergence. We need to see the sequence of earthly transformations as so many movements in a musical composition. This sequence of events that emerge in a time sequence need to be understood simultaneously; as in music the earlier notes are gone when the later

notes are played but the musical phrase, indeed the entire symphony, needs to be heard simultaneously. We do not fully understand the opening notes until the later notes are heard. Each new theme alters the meaning of the earlier themes and the entire composition. The opening theme resonates throughout all the later parts of the piece.

An Unfolding Mystery

So the "origin moment" of the universe, especially, presents us with a stupendous process which we begin to appreciate as an ineffable mystery unfolding through the ages. The flaring forth of the primordial energy carried within itself all that would ever happen in the long series of transformations that would bring the universe into its present mode of being. The original moment of the universe in its primordial energies was the implicate form of the present as the present is the explicate form of this "origin moment."

This primordial emergence was the beginning of the Earth story as well as the beginning of the personal story of each of us, for the story of the universe is the story of each individual being in the universe. Indeed, the reality inherent in the beginning could not be known until the shaping forces held in this process had brought forth the galaxies, the Earth, the multitude of living species, and the reflection of the universe on itself in human intelligence.

After the origin moment, a series of other transformation moments took place—the shaping of the first generation of stars within their various galaxies, then the supernova collapse of first generation stars. These creative moments brought into being the entire array of elements. These in turn made possible the future developments throughout the universe, but especially on the planet Earth where the expansion of life needed the broad spectrum of elements for its full development.

The gravitational attractions functioning throughout the universe gathered the scattered stardust into this second generational star and surrounded this star with its ninefold series of planets. Within this context, the Earth began its distinctive self-expression, a groping toward its unknowable and unpredictable future, while carrying within itself a tendency toward an ever-greater differentiation, a deepening subjectivity, an evermore intimate selfbonding of its component parts.

Such a wonderment comes over us as we reflect on the Earth finding its proper distance from the sun so that it would be neither too hot nor too cold, shaping its radius so that it would be neither too large and (thus make the Earth more gaseous like Jupiter) nor too small (and thus make the Earth more rockbound like Mars). Then the Earth-moon distance had to be established with such precision that the moon would neither be so

close that the tides would overwhelm the continents, nor so distant that the seas would be stagnant and life as we know it could not emerge.

Profound mysteries were taking place all this while, but nothing was as mysterious as this setting into place the conditions required for the emergence of life and the human form of consciousness. Through the work principally of James Lovelock and Lynn Margulis, we now understand in some detail that the story of life is so integral with the story of the Earth in its geological structure that we cannot properly think of the Earth as first taking shape in its full physical form and then life emerging somehow within this context. The simultaneous shaping of its physical form and the shaping of its life-expression took place in intimate association with each other. The living forms that appeared in the early history of the Earth were among the most powerful forces shaping the atmosphere, the hydrosphere and even the geological structures of the planet.

But while we need to understand the shaping power of living forms in the sequence of Earth transformations, we must also understand that living forms themselves were brought into being by the shaping power of earlier Earth development. Always there is this integral relationship between the earlier and the later. In the larger arc of this transformation process, the simpler forms are earlier, the more complex forms later, just as the simpler elements took shape in the earliest moments of the universe and the more complex elements came later.

While much else might be noted here at this early phase of Earth development, it is sufficient to note that these early determinations in the life development of the planet were decisive. Each had to happen at precisely the opportune moment in the sequence of Earth development for the planet Earth to be what it presently is in its historical reality.

The Universe Story as a Sacred Story

With all the inadequacies in the narrative as given here, it does present in outline form the story of the universe and of the planet Earth as this story is now available to us out of our present experience. This is our sacred story. It is our way of dealing with the ultimate mystery whence all things come into being. It is much more than an account of matter and its random emergence into the visible world about us; for the emergent process, as indicated by geneticist Theodosius Dobzhansky, is neither random nor determined but creative. Just as in the human order creativity is neither a rational deductive process nor the irrational wandering of the undisciplined mind but the emergence of beauty as mysterious as the blossoming of a field of daisies out of the dark earth.

In the Earth we find fulfilled in a special manner the primordial tendency of the universe toward clearly articulated and highly differentiated

entities. The Earth astounds us with the vast differences between itself and all the other planets. Each of the planets has indeed its own distinctive mode of being. But these other planets are all much closer to each other than any of them is to the Earth.

This unique mode of Earth-being is expressed primarily in the number and diversity of living forms that exist on the Earth, living forms so integral with each other and with the structure and functioning of the planet that we can appropriately speak of the Earth as a living planet.

This term, in my own understanding, is used neither literally nor simply metaphorically, but analogically, somewhat similar in its structure of the analogy expressed when we say that we “see,” an expression used primarily of physical sight but also used of intellectual understanding. A proportional relationship is expressed. The eye is to what it experiences as the intellect is to what it experiences. The common quality is that of subjective presence of one form to another as other. In this experience, the identity of each is enhanced, not diminished.

So in using this term “living” in speaking about a tree as a living being and in speaking about the Earth as a living being, we are indicating that some of the basic aspects of life, such as the capacity for inner *homeostasis* amid the diversity of external conditions, are found proportionately realized both in the tree and in the comprehensive functioning of the planet. In the tree, as the primary analogue, we have the basic functioning of the life process through its beginning as a seed with its identifiable genetic coding, its absorption of the energies of the sun, and the flow of its nourishment from its roots, through its trunk, to its leaves. Then there is the process of self-reproduction through the seeds that it germinates. In this process there is produced a certain continuing transformation of the surrounding atmosphere whereby the presence of the life process can be discerned.

So Earth too comes into being. Not, however, with an identifiable genetic coding guiding the Earth through its stages of development to its maturity, nor through birth from a prior Earth or living organism with the capacity to continue this generative process. Yet withal there are similarities that justify the use of the term “living” to describe the Earth in its integral functioning, especially in its capacity for inner self-adjustment to the diversity of external conditions to which it is subject. This “feedback” process is so remarkable along with the capacity of the Earth to bring forth such an abundance of life forms that the Earth can be described not simply as living but as living in a supereminent manner.

The use of metaphor and analogy does not diminish the reality of what is being said. The more primordial realities can be spoken of only in a symbolic manner. To indicate that the Earth is not exactly a living reality

in the sense that a bird or a flower is a living reality is not to diminish the significance of the Earth as a living being. It is rather to heighten the significance of what we are saying. Earth makes possible all those multiple forms of life upon the planet, not simply some single life form. Thus the Earth "flowers" into an immense variety of the various species, not simply into another Earth.

The deepest mystery of all this is surely the manner in which all these forms of life, from the plankton in the sea and the bacteria in the soil to the giant Sequoia or to the more massive mammalian forms, are ultimately related to each other in the comprehensive bonding of all the life systems. Genetically, every living being is coded not only in relation to its own interior processes, but also in relation to the entire complex of earthly being. This is what it means to be alive and to be the fertile source of life.

The highest designation of the Earth in this context of its fertility in bringing forth life is found in our reference to the Earth as Universal Mother, as Gaia. Earth is Mother, giving birth to all the living forms that exist on the Earth. However these living forms have influenced the shaping of the Earth, these forms themselves are derivative from the period prior to the appearance of organic life on the planet. Thus it is the Earth itself that is the subject most deserving of a maternal designation, not the biosphere. The Earth is the larger subject that activates its being in the total complex of spheres that constitute the Earth: the geosphere, the hydrosphere, the atmosphere and the biosphere. None of these have either existence or function apart from their unity in the Earth.

The Earth as Subject

We need to think of the planet as a single, unique, articulated subject to be understood in a story both scientific and mythic. Just as a tree is a unified subject capable of coordinating the vast diversity of activities involved in its emergence from a germinating seed, sending down roots into the soil, raising up its trunk, branching out in all directions, leafing, and finally setting seed for the further expansion of its life; the Earth is also a subject capable of coordinating the variety of activities whereby the various species come into being. In both instances we are dealing with realities that need both scientific and mythic modes of understanding.

The great benefit of the recent proposals concerning the Gaia Hypothesis is that they represent an effort at a larger pattern of interpretation. It might be suggested, however, that the Gaia designation may not go far enough in this larger sense of the Earth as a "living" reality. Neither the biological nor chemical studies alone can deal adequately with the superb achievement of the Earth in its self-shaping from the beginning.

Nor, apparently, do these give adequate consideration to the prior conditions for the appearance of life that the Earth, in its primordial phases, brought into being.

As with so many basic concepts in the array of human knowledge, the concept of Gaia is a multivalent concept giving rise to an extensive range of development in a variety of disciplines. Here we are concerned with the insight into the dynamism of Earth as this appears within a more comprehensive cosmology.

The Earth might well be the most unique reality in the universe, precisely in its capacity for bringing forth in the unity of a single being all those various modes of physical structure, organic life, and consciousness that presently constitute the reality of the planet. It seems also that Earth has the status of a privileged planet, not simply within our solar system but possibly throughout the entire universe. This privileged status is especially evident in the conviction of some scientists that the universe is as old as it is and as big as it is because it takes a universe this old and this big to produce a planet such as the Earth with the requisite conditions for the emergence of life and the human form of consciousness.

In this more comprehensive understanding of the Earth we might recall the primordial tendency of the universe toward the communion of every being with every other being in the universe. Ultimately this brings us back to the curvature of space, the primordial expression of the comprehensive bonding force of the universe. This bonding, expressed in gravitational attraction, is a primary psychic-spiritual as well as a physical ordering principle of the universe. Gravitational attraction keeps the divergent forces of the original emergence within the limits needed for the creative processes that have taken place over the centuries.

These two opposed forces, divergent and convergent, associated with the original emergence, give us the curvature of space, a curvature sufficiently closed to hold all things together in an ordered universe and yet sufficiently open to permit the creative process to continue over the centuries. It is this curvature that brings every component of the Earth into intimate association with every other component of the Earth. Everything within this curvature has not only its individual mode of being, but also its universe mode of being; the universe is integral with itself throughout its entire extension in space and throughout the full sequence of its transformations in time. Indeed, nothing can be itself without everything else. Everything exists in multiple dimensions. A tree is a physical being, a living being, an Earth being, and a universe being.

For the human especially these multiple modes of our being require not only the activation of the physical and biological modes of our being, but especially the activation of the psychic mode of our being. We have

our individual self, our biological self, our Earth self, and our universe self. It is through this attraction to the larger modes of our self-being that we are drawn so powerfully toward our experience of the Earth. We seek to travel through the Earth, to see everything, to experience the grandeur of the mountains, to plunge into the sea, to raft the rivers, to fly through the air, even to go beyond the Earth into space. All of this is for the psychic expansion of our being even more than for the physical thrill. In all these experiences, we come both to know the further realms of ourselves and to experience the deepest mysteries of existence—what might well be considered the numinous origins whence the Earth and the entire universe derives, by which they subsist, and in which they have their highest mode of fulfillment.

A New Form of Religious Entrancement

So the scientist seeks to understand the Earth in all its geological and biological forms, to examine the inner realms of the atomic and sub-atomic worlds. Even these recent concerns for understanding the Earth as a living organism arise not from an arbitrary feeling that it would be an interesting venture of the human mind. We are rather impelled to this inquiry through our efforts at our own self-discovery. It is a mystical venture; its ultimate purpose is to achieve a mystical communion—however this statement might be objected to by scientists themselves. The dedication of personal effort, the life discipline, the excitement of the discoveries made, the differences, the identities, the coherences, the moments of intellectual impasse; all these reveal a new form of religious entrancement and a quest for further revelatory experience. For the universe whence we emerged is constantly calling us back to itself. So too the Earth is consistently calling us back to itself. Not only ourselves but calling all its components into an intimacy with each other and to the larger community within which all earthly realities have their existence.

There is ultimately the single reality of the universe in which we exist. Because every atom is immediately influencing every other atom in the universe, however distant, the volume of each atom can be considered to be coextensive with the universe. Within this context, our ultimate referent within the universe is the universe itself, for only in the universe do we have a self-referent reality, a text without context. But although the universe is a self-referent reality there are two dominant modes of the universe; its unity mode and its differentiated mode. Each of these modes is revealed in the other. Indeed, the larger task of the scientific venture and, ultimately, the religious venture, is to relate these two modes to each other. For by definition the word "religion" indicates a "binding back" of things to their origin.

A Cosmological Context for Gaia

Thus the larger explanation of any part of the universe is the cosmological explanation. We need a Gaia theory. But we also need a cosmological context for understanding the meaning of the Earth as Gaia. This cosmological context is especially important in any consideration of the religious implications of the Gaia Theory.

Indeed, our scientific inquiry in this direction establishes the basis for a new type of religious experience differentiated from but profoundly related to the religious-spiritual experience of the earlier shamanic period in human history. Since religious experience emerges from a sense of the awesome aspects of the natural world about us, our religious consciousness is consistently related to a cosmology telling us the story of things in the beginning, how they came to be as they are, and the role of the human in enabling the universe in its earthly manifestation to continue the mysterious course of its creative self-expression.

Religiously speaking, we might consider that, because of the diversity in its life expression held together in such intimate unity, the Earth is a special presentation of the deep mysteries of existence whence religious consciousness arises. Saint Thomas in his writings refers to "difference" as "the perfection of the universe." The reason is that the divine could not image forth itself in any single being. Therefore, the divine brought into being the immense variety of beings so that the perfection lacking to one would be supplied by the others. "Consequently the whole universe together participates in the divine goodness more perfectly, and manifests it better than any single being whatever" (*Summa Theologica*, I, Q. 47. 1).

We could adapt this passage in a less theistic context by simply saying that the deep mysteries of existence are manifest more perfectly in accord with the greater diversity held in the greater unity. This provides us with a way of dealing with the special role of the Earth as manifesting the deepest realms of existence with a perfection unequalled in any other mode of being we know of for in the Earth we have our most magnificent display of diversity caught up into the coherence of an unparalleled unity.

In this context we can understand the special numinous quality attributed to the Earth. In its own self-manifestation, the Earth is also a manifestation of the ultimate mystery of things. The sense of awe and mystery that is evoked in the earliest human awakening to the universe is beginning to awaken once more within this new context of scientific understanding. We have indeed lost contact with the world of the sacred as this was experienced in a spatial mode of consciousness when time moved in eternally recurring seasonal cycles. Yet we now begin to experience the sacred dimension of our new story of the universe as an irreversible, emerging process.

No longer are we celebrating simply the seasonal renewal of the living world as this has been experienced in the past. We are experiencing in the world around us the primordial emergence of the universe in the full surge of its creative emergence. We ourselves are integral with the process.

Never before has any people carried out such an intensive meditation on the universe and on the planet Earth as has been carried out in these past few centuries in our Western scientific venture. Indeed there is a mystical quality in the scientific venture itself. Science may well be the yoga of the West. This dedication, this sacred quest for understanding and participation in the mystery of things, is what has brought us into a new revelatory experience.

While there is no necessity for us to be professional scientists, there is an absolute need for us to know in its basic pattern the story of the universe, and of the planet Earth, as this is now available to us. It is our new Genesis, our own story of how things came to be in the beginning, how they came to be as they are, and our role in the story. The great necessity is that this story be understood and be told as the creative process that it is, our special revelatory experience of the divine mystery itself. Only out of this new revelation can we discover the vision that we need, the mystical communion we seek.