

The Epic of Evolution

Our main concern here is with the Universe Story and our human role in that story. There is, it seems, such a long way from the vastness of the universe to ourselves gathered here in Chicago in the Field Museum of Natural History.¹ Yet this is an appropriate place for our meeting, since the purpose of this museum is to bring our present human venture into an intimate presence with these earlier forms of life so different from our ordinary experience.

But even while all these displays of earlier life are here, they seem to play a somewhat limited role in any interpretation of the human project other than the scientific, the academic, or the technological phases. We know more about the universe than any people ever knew. We have more command over the functioning of the Earth than any people ever had. Yet we are less intimate with the universe than peoples of previous times. This can be seen in the work of scientists such as Steven Weinberg, who writes with great insight about the earlier phases of the universe and then remarks that the more we know about the universe the less meaning it seems to have.

When we inquire just why scientists devote such intense effort, such enduring dedication to research projects concerned with the story of the universe, one answer might be that scientists are answering the irresistible call of the Great Self of the universe to the Small Self of the individual. We are only beginning to be aware that this attraction of the scientist to the study of the universe is itself one of the more fascinating aspects of the universe. Since the universe is

the only self-referent mode of being in the phenomenal world, every being in the universe is universe-referent for its origin and destiny and its proper role in the great community of existence. If there is such a thing as human intelligence, then it has emerged out of the universe, and, in its functioning, it must in some manner be ordered toward the universe. The primary study of human intelligence might be designated as universe study or, in a term derived from the Greek, cosmology. Only through understanding the universe can we understand ourselves or our proper role in the great community of existence.

All human occupations and professions must themselves be expressions of the universe and its mode of functioning. This is especially true of what came to be known as religion, for the term *religion* and the term *universe* are somewhat similar in their meaning. Both are derived from the Latin, and both have to do with turning back to unity. Religion, *re-ligare*, is a binding back to origin. Universe, or *universa*, is a turning back of the many to the one. Earlier peoples seem to have understood this. They lived in a pattern of human activities that were validated by their relation with the cosmological sequence. They lived within the Covenant of the Universe, the ontological covenant whereby each component of the universe experienced itself in intimate rapport with the other components of the universe. They constantly evoked their self-consciousness within their universe-consciousness. The one had no meaning without the other.

They situated themselves at each moment in terms of the four cardinal directions governed by their position in relation to the sun. The sun arose in the east, set in the west. At midday the sun was in the south. The north was where the sun never situated itself. The sky was above, Earth below. Each person received self-validation by this act of knowing exactly where he was in the universe. So too with any structures erected on the Earth. These could only be authentic, even physically secure, by being ordered in relation to the cosmological directions. This required careful alignment with the celestial world

whence the sense of direction as well as the sense of time was derived.

With regard to time and seasons, rituals were established to create a consciousness of the moments of cosmological change: the dawn and dusk of the daily sequence of sunlight and dark, the increase and decline in the phases of the moon, the winter solstice especially as the danger moment of the universe, the period of dark descent; then came the rise into a world of warmth and light and the blossoming of the plants and the birth moment throughout the mammalian world. These moments of change were the moments when the shining forth of the phenomenal world was most evident. Such moments were moments of grace, moments when the sacred world communicated itself with special clarity to the world of the human.

This intimacy with the universe can be seen in the initiation ceremony of the Omaha Indians. When an infant is born, the child is taken out under the sky and presented to the universe with the invocation "O Ye Sun, Moon, Stars, all Ye that move in the heavens, I bid you hear me. Into your midst has come a new life. Consent Ye, we implore, make its path smooth that it may move beyond the first hill." After this invocation to the heavenly powers, the invocation is made to the atmospheric powers, to the clouds, the wind, the rain, and the snow, with a similar petition that these powers too would accept the child and guide it on its way. So too an invocation was made to the powers of living beings on the Earth, and then to the Earth and the insects and to all those beings that live within the Earth. In this manner the covenant of Earth was affirmed. Humans asserted their intimacy with the Earth and acknowledged their dependence on the larger community for whatever they needed in life.

This was also true in the Chinese world. There, the imperial palace was constructed in such correspondence with the movement of the natural world that the emperor could move from one section of the palace to another with each change of seasons. The colors of the garments worn by the emperor were also coordinated with the

changes of the cosmological order. The music was altered to suit the quiet and dark of winter or the brightness and delight of summer. If these correspondences between the human and the cosmological order were not observed, the entire order of the universe would, supposedly, be thrown into disarray.

In Western civilization at an earlier period, the entire structure of Western ritual was cosmologically oriented. This was most obvious in the worship ritual that was extensively coordinated, especially in the Christian monasteries, with the sequence of changes during the day-night cycle. Psalms and hymns were sung in the middle of the night to celebrate the deep contemplative aspect of the nocturnal hours; then came the dawn rituals, the midday and evening rituals. So too at its highest moment of intellectual development, the entire theological explanation of Western religion was integrated with physics and metaphysics and cosmology as these were handed down through the Aristotelian tradition. This was the great work of Thomas of Aquinas, to restructure all Christian thought within a cosmological perception. That is why he tells us quite clearly in the prologue to his summary of Christian belief that divine revelation comes to us through two scriptures, the scripture of the natural world and the scripture recorded in the Bible. That is why also he tells us, "The Order of the Universe is the ultimate and noblest perfection in things."²

Throughout this premodern period, the universe, experienced as a cosmic liturgy celebrating the grandeur of existence, was the ultimate creative force in the phenomenal order giving shape, resplendence, vigor, and meaning to every mode of being. Above all, it was the primary locus, the primary place for the meeting of the divine and the human. Simply to draw attention to such grandeur of perception and human participation in such ecstatic fulfillment is to awaken a deep wonderment in our modern souls. To us who live in this very secular age, all this appears in a distant world, something of a dream world, a world that we cannot experience as entirely real.

We live too deeply alienated from the cosmological order, the phenomenal world, the world of the "shining forth" (for such is the meaning of the word *phenomena*). We live in a human world, a world where all our values are human. The natural world is experienced as subservient to the human. Its reality has diminished as the human has been magnified. If we give attention to the universe, it is to the scholarly world of scientific equations, of atomic and subatomic particles; to the technological world of mechanistic contrivances; to the economic world of unlimited human use of the Earth as a collection of natural resources.

We seem not to appreciate the dazzling wonder or the sacred dimension that finds expression in the universe itself, a universe that emerged into being by a creativity beyond anything we can imagine, a world that assumed its present form by an unpredictable self-organizing power. What is truly amazing is that these unpredictable processes, sometimes considered to be random, produced a universe so coherent in its structure and so finely ordered in its functioning amid the turbulence of an awesome and relentless inner creative energy.

Even when we penetrate so deeply into the reality of the physical and the biological orders, even when we understand clearly that the human story and the universe story are a single story, we somehow fail in our ability to tell the story in a way that would provide a comprehensive meaning for our human mode of being. In earlier times a world of meaning was worked out within a universe and a planet moving in ever-renewing seasonal cycles. However, such a world of meaning has not yet been worked out within a universe that has come into being by a primordial flaring forth giving rise to an irreversible sequence of transformation episodes. These episodes move in the larger arc of their sequences, from lesser to greater complexity of structure and functioning and also from lesser to greater consciousness. This unfolding sequence is self-emergent, self-sustaining, self-educating, self-governing, self-healing, and self-fulfilling. From

this source must come all emergence, all nourishment, all education, all governance, all healing, all fulfillment.

Humans, in this earlier period of cultural development, experienced themselves as owning nothing, as receiving existence itself and life and consciousness as an unmerited gift from the universe, as having exuberant delight and unending gratitude as their first obligation. It was a personal universe, a world of intimacy and beauty. A universe where every mode of being lived by a shared existence with all other modes of being. No being had meaning or reality or fulfillment apart from the great community of life. This primordial Earth community itself existed through the presence of the indwelling spirit whence came its sacred character.

Whatever humans needed was supplied by the surrounding world, whatever inspiration for their imagination, whatever awakening of intelligence, whatever personal fulfillment. This joyful fulfillment found expression in poetry and music and song and dance, a fulfillment that continues to find expression in our children running through the meadows, wading in the creeks, playing with animals, or simply sitting with utmost satisfaction in a backyard puddle experiencing the cooling delight of such an environment on a summer's day. Such is the beginning of education, of aesthetic experience, of physical vigor, of acquaintance with the universe. This is the awakening of both the senses and the mind. Ultimately it is the awakening of the universe to itself. This is the beginning of poetry and music and literature. It is the beginning of cosmology, of philosophical reflection, of moral perception, of theological insight. It is the beginning of the *Epic of Evolution*.

This fulfillment within the capacities of the child is continued in an unbroken sequence in the life of the adult. The experience deepens, but it is not essentially different. Fulfillment for humans continues to be delight in the celebration of existence in intimate presence to the comprehensive community of the universe—only deepened in its significance by experience of the tragic, the painful, the sacrificial dimension that is found throughout every realm of existence.

In the child's quest for experiencing the universe, Maria Montessori found the basic guidance that we need for an integral educational program within the *Epic of Evolution*. As she indicates in her 1936 series of essays titled *To Educate the Human Potential*, the six-year-old child needs to experience his own center as the center of the universe. That is what the child is seeking in his excited discovery of the surrounding universe. Montessori writes, "Since it has been seen necessary to give so much to the child, let us give the child a vision of the whole universe. The universe is an imposing reality, and an answer to all questions. We shall walk together on this path of life, for all things are part of the universe, and are connected with each other to form one whole unity. This idea helps the mind of the child to become fixed, to stop wandering in an aimless quest for knowledge. He is satisfied, having found the universal center of himself with all things."³

Then she describes the security that the child feels within the integral functioning of the natural world as soon as he is assured that the universe is that which gives him orientation. In this wandering through the natural world, the imagination is inspired, the mind is activated, the feeling of nobility developed. What Montessori could not experience in her times was the empirical evidence of the intimacy of every phase of the universe with every other phase such as we now recognize to be the basis for all scientific inquiry. Yet she knew that the child needed to know the story of the universe and to grow throughout life with ever-greater intimacy with the universe and ever-greater delight in celebrating the grandeur of existence within this vast community.

This story of the evolutionary universe, she told with amazing detail for the period in which she lived. She recognized that the telling of the story of the universe should not be a technical explanation of the evolutionary process, nor should it be interrupted by constant reference to how we discovered the story. The story needed to be told in direct narrative, even in epic style. So she tells us, "To interest the children in the universe, we must not begin by giving them elemen-

tary facts about it, to make them merely understand its mechanism, but start with far loftier notions of a philosophical nature, put in an acceptable manner, suited to the child's psychology."⁴

Then she proceeds to tell the drama of the emergent universe, of the formation of the oceans, how the continents came to be, then the origins of life and the biosphere. Then comes a transition moment of great significance, a lengthy transition to the human: "The Earth was trembling with expectancy and glad foreboding. Her heart moved in sympathy with creation's joy; tremors ran through her frame and emotional tears coursed through her in new streams."⁵ How appropriate a way of indicating the moment when the Earth was about to reflect on itself, to see itself for the first time within the human mode of intelligence. Then she continues on to the emergence of the human, and the sequence of stages of human cultural development, and finally to the rise of modern empirical science and our unique experience of the universe in the vast range of its extent and the full sequence of its transformations in time.

This excitement of which she speaks is not the excitement of the builder following a blueprint in building a house. It is rather the excitement of the musician creating a symphony, of the artist who is designing a painting or a sculpture, or the expectation of a poet as he moves into the most significant lines of a poem to which he has dedicated his effort over a long period of time. Such a moment the poet Goethe referred to when he noted that, in writing his finest lines, it seemed that his spirit guide took over his pen and did the writing. Neither the painter working out her design nor the poet writing out his vision nor the musician writing a symphony knows just what he is about to do. Nor are they totally ignorant. Yet in a way the artist and the musician know exactly what they are working toward: a vision of beauty, a musical phrase that expresses the full depths of some deep human experience. There is at this moment an intensity of feeling, an expectation, a joy of soul, all of which then flows over into the creation that emerges. It is this that Maria Montessori had

in mind when she wrote of the mood of excitement in the universe at the moment when the human first came into being. The human is the model for understanding the universe, as the universe is the model for understanding the human. For certainly humans have nothing but what they receive from the universe.

This beginning account of the Epic of Evolution needs to be further developed in order to guide the entire course of human affairs into a more coherent rapport between the universe community and our modern human society. The evolutionary universe should be the primary referent in every field of academic concern as well as in every human concern.

This would be clear especially in economics, where the economic well-being of the human would be sought within the well-being of the natural world, whence all human wealth and well-being is derived. The first law of human economy would be to preserve the integral economy of the planet and to seek the well-being of the human within this context. Sociology would not envisage the human community apart from the larger Earth community or apart from the integral bioregional communities of the Earth. In law and government, humans would discover their proper role within the governing structures of the surrounding natural world. For the planet Earth has a governance with a precision and an efficacy far beyond anything that humans might contrive. Human governance should not seek to override the governance of the natural world, but rather should aim to integrate human presence with this governance and extend human intellectual understanding and conscious decision-making to include the broader Earth community.

In this governance, each form of existence has its own role, for each form brings to the community a perfection of insight found in no other mode of being. The integral evolving community would be not simply the human community but the larger community of the Earth. Not only the rights of the human but the rights of every mode of Earth being would be recognized. The basic biological law concerning habi-

that would be recognized as binding also on humans: the law that every species should have conditions that limit each species so that no one species or group of species would overwhelm the other species. This law would be recognized as binding also upon the human, with the difference that humans need to obey this law by conscious recognition and free compliance, whereas the nonhuman species would be constrained in their modes of action by their genetic coding.

This is also the case with medicine. The first recognition would be that there cannot be well humans on a sick planet. The way to human well-being would be to recognize that the Earth brought humans into existence and established the conditions for the well-being of the human by an integral relation with the other life systems of the planet. We have now thoroughly polluted the life systems. To keep this integral community from becoming even more toxic due to human interference would be recognized as a primary concern.

In religion and theology, the great need is to join in the great liturgy of the universe, not now simply an abiding ever-renewing universe but a universe distinguished as both abiding and transforming. We might think of the threefold evolutionary process: the galactic evolutionary processes of the universe, the geobiological evolutionary processes of the Earth, and the cultural evolutionary processes of the human that need to be understood in their sacred dimension. These are the three components of the single evolutionary narrative that needs to be seen and understood and recounted in epic style.

Epic narrative, we might say, is the manner in which a period or a culture articulates its experience in the tragic yet glorious enterprise of survival in the midst of fearsome threats to life continuance and fulfillment of some destiny. Epics are celebrated in poetry and music especially. Among the epics that we are best acquainted with are the Homeric epics, the epic story of the Bible, and the epic of Virgil, the *Aeneid*. In India there is the tale of Rama and Sita in the *Ramayana* and the account of the great Bharata, the *Mahabharata*. In Europe, there are also the epics the *Song of Roland* and the *Nibelungenlied*, the ring

cycle. In these stories the ideals of the society are articulated. Personal and community life are revealed in their heroic dimensions. Cosmological forces of the surrounding world are identified. The sense of the sacred is expressed. The rituals of the society are enacted. The ideals of personal conduct are made evident. The community is protected at personal risk to the heroic individual. Above all, the sense of transhuman forces at work throughout the universe is communicated.

If in the past the great moments in human achievement were presented in epic narrative, we must now appreciate that the universe achievements are the subject of the authentic epic of the late twentieth century. A world of these times is no longer simply the human world; the epic of the world is no longer the epic of a nation or even of the assembly of nations. It is rather the epic of an emerging universe that humans have come to appreciate for the first time with such intimate knowledge of the turbulent trials through which it has passed. No story of human affairs can begin to compare with this story for its significance throughout the order of Earthly affairs. While this narrative does not displace any other religious or literary narrative, this story bears the impress of many sacred values to be identified and celebrated with a new appreciation. Such is the triumph of science to give us this story in infinite detail.

In this evolutionary story, we easily identify the moments of change. These moments of transformation are the mysterious, the sacred moments, the moments when a numinous guidance shows through amid the turbulent course of universe affairs. Such moments we can no longer believe are controlled by purely random consequences out of a roiling sea of conflicting forces. Between the random and the directed, as the geneticist Theodore Dobzhansky insisted, lies the creative. Randomness is another name for the mysterious ordering processes that affect all artistic creativity.

The dazzling course of things is exciting indeed. Yet the mysterious moment when the galactic formations took shape and the stars were formed throughout the heavens deserves celebration in litur-

gies not dissimilar from the liturgies coordinating human activities with the transforming moments of the seasons of the years or the transformation of day into night or night into day.

To illustrate how the Epic of Evolution might be integrated into traditional religious services, I would like to mention the most sacred moment in traditional Christian liturgy, the moment designated as the Easter vigil. This is the moment when the experience of life renewal is reenacted. This liturgy is to be celebrated in the darkness of night, just before the dawn. At this moment the story of the creation of the world is recited, as are the events that transpired in the historical order until the moment of renewal. What is striking in this narrative is that the story of creation is a very limited narrative, since in earlier times the only account of creation of the universe in the religious traditions of the Western world was contained in the few paragraphs of the Book of Genesis. After that, the entire story of history was the human story. There was no further story of the galaxies or the formation of the Earth or the evolutionary emergence of life. What is now available to us is a more extensive account of the universe and how it came into being through the immense amount of time and through a long sequence of transformation episodes. This, to my mind, needs to be incorporated into the story of the creation of the world as this is narrated in religious liturgy.

Of the possible moments for celebration, one that deserves mention is the galactic formation and the formation of the stars. Another might be the first-generation star that, some 4.5 billion years ago, formed the ninety-some elements in its supernova moment of implosion, and then explosion, as fragments into space. By gathering these fragments with the aid of gravitational attraction, our own star came into being, with the Earth as one of its nine planets. We might note the rise of the first living cell become possible some 3 billion years ago amid the turbulent shaping of the planet. Then came sexual reproduction, later photosynthesis. From then on, a long choice of celebrations would present itself.

The evolutionary responsibility of the human, from a religious perspective, is to perceive the epic of the universe as the primary revelatory experience of our times. Our perception of the natural world, which in former times was understood in its ever-renewing sequence of seasonal change, is now changed. The natural world is the irreversible sequence of change such as we now experience it through empirical scientific studies. There is an additional revelation that we are having. Revelation is not something merely of the past. It is the reality of the present. Just as the universe reveals the basic sources of economic understanding, as the universe is the guide to medical understanding, so the universe is our guide to understanding the sacred dimension of the universe. For too long a time we have refused to accept the insight into the world of the sacred that is there before us. The scientists themselves have been overwhelmed by their discoveries and have found it difficult to explain themselves in other than scientific equations and mathematical description.

Now that this awareness of the epic dimension of the evolutionary process begins to be seriously considered, a new world of understanding begins to appear on the horizon. My first thought is that we not try to write theology at this moment. My thought is that we celebrate the glory of the universe that is there before us. We need have no doubt of the appropriateness of our celebration of the sacred in this epic narrative. Here we join the great wisdom traditions of the past. In the Epic of Evolution, science becomes a path to wisdom.

NOTES

1. This was originally delivered at a conference, "The Epic of Evolution," held at the Field Museum in November 1997 and sponsored by the American Association for the Advancement of Science.
2. Thomas Aquinas, *Summa Contra Gentiles* 2.24.10.
3. Maria Montessori, *To Educate the Human Potential* (Madras, India: Kalakshetra Publications, 1948), p. 8.
4. *Ibid.*, p. 28.
5. *Ibid.*, p. 61.