

The Ecozoic Reader

CRITICAL REFLECTION, STORY AND SHARED DREAM EXPERIENCE
OF AN ECOLOGICAL AGE



“The historical mission of our time is to reinvent the human—at the species level, with critical reflection, within the community of life systems, in a time-developmental context, by means of story and shared dream experience.”

—Thomas Berry

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The Great Work

We are about the Great Work.

*We all have our particular work—some of us are teachers,
some of us are healers, some of us in various professions,
some of us are farming.*

We have a variety of occupations.

*But beside the particular work we do
and the particular lives we lead,
we have a Great Work that everyone
is involved in and no one is exempt from.*

*That is the work of moving on from a terminal Cenozoic¹
to an emerging Ecozoic Era² in the story of the planet Earth...
which is the Great Work.*

- Thomas Berry

¹ Our current geo-biological era, the Cenozoic Era, began 65,000,000 years ago following the mass extinction of dinosaurs and many other species. Now Earth is undergoing another mass extinction of plant and animal species, this time caused by the impact of human activity on the community of life systems. The Cenozoic Era is ending.

² That another geo-biological era will follow the Cenozoic Era is not in question. What is in question is whether humans and other forms of life as we know them will continue to flourish. Will we achieve a viable mode of human presence on the Earth? The “Ecozoic Era”—a time of a mutually enhancing relationship of humans and the larger community of life systems—represents the hope that we will.

Pre-Dawn—The Great Blue Heron

By Margaret Galiardi, O.P.

Briskly I walk in the grey-blue light preceding the dawn.
Mindlessly I move toward the water's edge.
Indistinguishable form among the muted morning hues alarmingly pierces
the stillness
 with its cry, calling me to attention.
Quickly it skims the water's surface, lifting off into the waking morning sky,
moving me
 to stillness.

I return
morning after morning
walking now in mindfulness as I approach the muddy, reed-sheltered shore
where
The Great Blue Heron
barely perceptible in pre-dawn light, awaits Earth's turn into full sun.

Forgiving of my initial intrusion she grants me a daily, if fleeting
rendezvous,
but she will not, indeed cannot, allow proximity of approach.
Pushing the boundaries of propriety in search of greater intimacy, I slowly
raise the
 glasses upon glimpse of her.
Turning toward me her eyes catch the emerging light.
Green-yellow fire locks onto my gaze.
I behold Spirit: this Great Blue Heron.



Dawn—Awesome Being

By Patricia Webb

I would have been useless on the farm
In the early morning.
I would not have done my chores,
Milked cows or opened pasture gates.
They would have found me
Hiding, still as a stone,
Lost in the cry of an owl.
Pen poised above paper
Waiting, waiting,
To catch the silent, awesome being
Who creeps with light into the new world.

Dawn is an amazing thing.
So amazing that we should be awake,
Awake and still,
Catching, if we can, what it does
To the trees.
Catching, if we can, the subtle hues of grass
In changing light.
Hearing how birds gain confidence
From dark, tentative cries to bright and fragrant symphonies.

Dawn is an amazing thing.
And I am still, so still,
Catching it today.
Wishing I had never missed it, even once,
In all my life.
Wishing I had given this much attention
Each time, each time.

Thinking how the world could be so whole
If we could see how easily dawn
Weaves a new day from the darkness,
From the stillness.
If we could see how dawn, sweet and subtle daughter,
Leads us into day
Without a single false step.



Defining Terms: “Religion,” “Ecology,” and “Religious Ecology”

By Mary Evelyn Tucker

The issues concerning the study of “religion,” “ecology,” and “religious ecology,” are complex involving peoples, cultures, worldviews, and academic disciplines. Therefore, it is important to be clear about our terms. Religion is more than simply a belief in a transcendent deity or a means to an afterlife. It is, rather, an orientation to the cosmos and our role in it. We understand religion in its broadest sense as a means whereby humans, recognizing the limitations of phenomenal reality, undertake specific practices to effect self-transformation and community cohesion within a cosmological context. Religion thus refers to those cosmological stories, symbol systems, ritual practices, ethical norms, historical processes, and institutional structures that transmit a view of the human as embedded in a world of meaning and responsibility, transformation and celebration. Religion connects humans with a divine or numinous presence, with the human community, and with the broader Earth community. It links humans to the larger matrix of mystery in which life arises, unfolds, and flourishes.

In this light nature is a revelatory context for orienting humans to abiding religious questions regarding the cosmological origins of the universe, the meaning of the emergence of life, and the responsible role of humans in these life processes.¹ Religion thus situates humans in relation to both the natural and human worlds with regard to meaning and responsibility. At the same time, religion becomes a means of experiencing a sustaining creative force in the natural and human worlds and beyond. For some traditions this is a creator deity; for others it is a numinous presence in nature; for others it is the source of flourishing life.

This experience of a creative force gives rise to a human desire to enter into processes of transformation and celebration that link self, society, and cosmos. The individual is connected to the larger human community and to the macrocosm of the universe itself. The transformative impulse seeks

¹ See, for example, Peter A. Coates, *Nature: Western Attitudes Since Ancient Times* (Berkeley: University of California Press, 1998).

relationality, intimacy, and communion with this numinous power. Individual and communal transformations are expressed through rituals and ceremonies of celebration. More specifically, these transformations have the capacity to embrace the celebration of natural seasonal cycles as well as various cultural rites of passage. Religion thus links humanity to the rhythms of nature through the use of symbols and rituals that help to establish moral relationships and patterns for social exchange.

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The term “ecology” locates the human within the horizon of emergent, interdependent life rather than viewing humanity as the vanguard of evolution, the exclusive fabricator of technology, or a species apart from nature. “Scientific ecology” is a term used to indicate the empirical and experimental study of the relations between living and nonliving organisms within their ecosystems. While drawing on the scientific understanding of interrelationships in nature, we are introducing the term “religious ecology” to point toward a cultural awareness of kinship with and dependence on nature for the continuity of all life. Thus, religious ecology provides a basis for exploring diverse cultural responses to the varied Earth processes of transformation. In addition, the study of religious ecology can give us insight into how particular environments have influenced the development of cultures. Therefore, one can distinguish religious ecology from scientific ecology just as one can distinguish religious cosmology from scientific cosmology.

This awareness of the interdependence of life in religious ecology finds expression in the religious traditions as a sacred reality that is often recognized as a creative manifestation, a pervasive sustaining presence, a vital power in the natural world, or an emptiness (*sunyata*) leading to the realization of interbeing. For many religions, the natural world is understood as a source of teaching, guidance, visionary inspiration, revelation, or power. At the same time, nature is also a source of food, clothing, and shelter. Thus, religions have developed intricate systems of exchange and thanksgiving around human dependence on animals and plants, on forests and fields, on rivers and oceans. These encompass symbolic and ritual exchanges that frequently embody agricultural processes, ecological knowledge of ecosystems, or hunting practices.

The study of religion and ecology explores the many ways in which religious communities ritually articulate relationships with their local landscapes and bioregions. Religious ecology gives insight into how people and cultures create both symbolic systems of human-Earth relations and practical means of sustaining and implementing these relations.



A Spirituality for the Ecozoic Era

By Julie Purcell

What kind of spirituality is strong enough, inspiring enough, and realistic enough to move us into the Ecozoic Era? Many people are struggling, dreaming, reflecting, discussing, and praying about this important question. I believe the ecological crisis requires a spiritual transformation. We need the inspiration, hope and guidance of a spirituality that can lead us through this dangerous passage. Humans are capable of great sacrifice when they are inspired, passionate and confident of their guiding vision. If we were passionately in love with Being, with Life, we could not hold back. We would participate whole-heartedly in the Great Work needed at this juncture.

The mystical tradition is one stream where I find hope and guidance for an ecological spirituality. “The only cure for the angst of modern man is mysticism,” said Thomas Merton, well known 20th century Catholic monk. Mystical experiences are direct experiences of the human with God, Godde, Supreme Reality, the Other, the Sacred. The mystic is not a special kind of

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human being, but each person and even each animal, plant, life form is a special kind of mystic. Each of us can recall a moment, an experience that stands out and has special meaning—with another person, with a Spiritual Presence, with a flower, a deer, a squirrel, a sunset, an ocean. For that moment life made sense and we felt deeply connected to Life. It is an ineffable experience, both inner and outer, of God/Godde as the living core-center of our being, a core that is often

named Love or Beloved. This experience, difficult to express, often requires poetry, metaphor or love language. The words of Meister Eckhart, 13th century Christian mystic, are helpful. He wrote, “In the spark of the soul there is something like the original outbreak of all goodness, something like a brilliant light which gleams, and something like a burning fire which burns incessantly. This fire is nothing other than the Holy Spirit of God.” In the mystical tradition humans are understood to have God/Godde’s own seed within us longing to be reunited with the Beloved.

For all of time, nature has been the primary source for mystical experiences. Earth is our common home. None of the major religions are mother of the ocean; rather the ocean is mother of all things. Our religions, even oral traditions, are recent in relation to the lifetime of the sea or the creatures. Mechtild of Magdeburg said in the 16th century, “The truly wise person kneels at the feet of all creatures.” Natural mysticism perceives the numinous reality of the source as it dwells in, surrounds and emanates from nature and the cosmos. It also recognizes an inner connection and bond between and among all things and experiences their unity. Thomas Berry expresses it this way, “For we will recover our sense of wonder and our sense of the sacred only if we appreciate the universe beyond ourselves as a revelatory experience of that numinous presence whence all things come into being. We become sacred by our participation in this more sublime dimension of the world around us. Dostoyevsky says it in poetry:

Love all creation.
The whole and every grain of sand in it.
Love every leaf,
and every ray of light.
Love the plants.
Love the animals.
Love everything.
If you love everything
you will perceive the Divine Mystery
in all things.
Once you perceive it
you will comprehend it better every day.
And you will come, at last,
to love the whole world
with an all embracing love.

Brian Swimme, in his “Canticle to the Cosmos,” gives a scientific understanding of the universe that validates what mystics have known intuitively all along—that the ultimate aim of the universe is the fullness of differentiation, the deepest subjectivity, and the most intimate communion. Every moment is an unrepeatable treasure. The ultimate aim of the universe is for each thing—each subject—to be recognized in its sacred depths by every other subject. Each hawk, each tree, each bit of soil, each frog and each human has a different point of view of reality. Each flows into the other.

Each species has an intrinsic value of its own; we cannot even know the extent of the loss practically and spiritually when a species becomes extinct, lost forever. Our world is an interpenetrating symphony of consciousness.

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I think an ecozoic spirituality will be an interfaith spirituality, and the mystical tradition feels hopeful to me because it is non-dogmatic and accepting of diversity. There is no Buddhist river, or Episcopalian mountain, or Catholic meadow, or Hindu ocean, or Jewish rainforest. There is wisdom in all creation and all traditions. Just as all species are needed, so is the wisdom of all the ages. I agree with Miriam Therese McGillis when she says that consciousness is calling us to go back and recover everything – to recover the revelation within everything from the beginning 15 billion years ago. And when you go back, she says, you don't have to lose anything, you

can save the images of God that have been meaningful, and you can recover what has been neglected and distorted and ignored. The whole cosmos is scripture! Even though they have fallen far short and had many destructive distortions, I don't think we can afford to throw the classical religions out. Matthew Fox, in his book *One River, Many Wells*, says, "It is time for our species to grow up. This means, among other things, that instead of relating religion to religion with our reptilian brains and our testosterone in high gear (my God can beat up your God), we ought to relate religion to religion from our deepest hearts and most creative minds."

Fox's treatment of the Cosmic Christ is an example of how mysticism can reinterpret the elements within a tradition. The Cosmic Christ is an ancient image that includes more than Christianity; it includes Cosmic Wisdom, Goddess, Buddha Nature, and the Wisdom tradition in Judaism. The Cosmic Christ is closely connected with praise, celebration, and dance. The Cosmic Christ brings back Eros, the ability to connect with the life force and to love life. Our spirituality must include and love the body; it must be embodied. "Prayer is the inhaling and the exhaling of the one breath of the universe – 'ruah' or spirit," said Hildegard of Bingen. By putting the Cosmic Christ archetype back into the life of the historical Jesus, we can find that all the events of Jesus' life are set in a cosmic context. There are many connections to Sophia, Lady Wisdom that have been neglected and covered

over by the patriarchal church. This is just one example of the exciting possibilities of reinterpretation in existing traditions.

Another aspect of mysticism that is critical for the Ecozoic Era is its emphasis on transformation. We must change if we are going to move into an era of mutual harmony of the human with other sentient beings. We need to go through a painful process of surrendering our egocentric egos and we can receive help and guidance from the Christian, Buddhist, Sufi and other traditions. This may be why Rumi, a Sufi, is the most popular poet of our time. In the mystical tradition there is an intense purification/transformation process, which is well documented in the Catholic writings of Saint John of the Cross and Saint Teresa of Avila. Buddhist practices help to achieve detachment and to learn compassion for self and others. I have found Andrew Harvey's description of the purification process very helpful. He names these stages of mystical transformation: awakening, illumination, union, and birthing. The birthing stage is important in that it stresses the need for ongoing service through love and compassion to all. This love and compassion becomes possible in the union with Cosmic Wisdom.

My final concern is that this spirituality for the Ecozoic Era addresses the recovery of the Divine Feminine. It has been disastrous for the Divine Feminine to be lost and denigrated and along with it, Earth, the body and half of the human race. Ecological feminists have concluded that any environmental ethic that fails to take seriously the interconnected domination of women and nature is simply inadequate. I say that a spirituality is inadequate if it fails to take seriously the loss of the Divine Feminine. A spirituality that can take us into the future must address our deep despair and underlying loss, which is sometimes unconscious. This loss has its deepest roots in our loss of connection to our first Mother, our primal matrix, the Earth.

As a psychotherapist working with survivors of childhood abuse, I have understood for a long time that all abuse is spiritual because abuse is shaming and shame cuts us off from our essential worth. I have understood that child abuse has had a negative impact on our image of ourselves and our image of God/Godde. Now I see that this insight has not gone far enough. Abusive parenting must certainly be changed and the impact understood, but the loss is much bigger than our relationship with our personal parents. There is a more primary Mother and Home that we are cut off from—the natural world.

Our woundedness from this loss is far greater and needs to be named, grieved and restored. In her book, *My Name is Chellis and I'm in Recovery from Western Civilization*, Chellis Glendinning calls this woundedness our original trauma. She suggests that this is really the Fall (Original Sin) which is described in different religious myths. "Original trauma is the disorientation we experience, however consciously or unconsciously, because we do not live in the natural world. It is the psychic displacement, the exile that is inherent in civilized life. It is our homelessness."

At this time I knew nothing intellectually about the Goddess religions, but my body knew and my grief was overwhelming.

I first experienced remembering my Great Mother through an image that came during a Reiki bodywork session on an 8-day silent retreat. Having been in silence for several days helped me to be available at a deeper level. While the therapist moved her hands above my head I had a vision behind her going all the way back—thousands and millions of women—and thousands of years. At the end of this stream of women was an enormous tree—the Mother Tree. At this time I knew nothing intellectually about the Goddess religions, but my body knew and my grief was overwhelming. I cried inconsolably, and as I looked at myself in the image

I was on an altar and my legs had been cut off at the knees—blood was streaming down as tears literally were streaming down my face. I had been cut off from my Mother, my roots, my Home. I had no legs to stand on.

After this experience and several others that were more joyful, I began to read and explore everything available about the Divine Feminine in the oldest Goddess religions and in all the classical religions. Marija Gumbatus' groundbreaking archeological work in *Language of the Goddess* describes a pervasive culture throughout Old Europe who worshipped the Great Mother in varied forms, often animal-human combinations, or just animal forms. The *Myth of the Goddess* by Anne Baring and Jules Cashford traces the image of the Goddess throughout prehistory and history. In the last 20 years a groundswell of books on the recovery of the Divine Feminine has lined the shelves of bookstores and even some libraries. In my study I have found that the mystics in many of the traditions, including John of the Cross in the Christian tradition and the Hindu mystic Ramakrishna, connected deeply

with the Divine Mother, even if she was not explicitly named. So again, mysticism has been keeping alive a tradition that honors the deepest wisdom of the earth.

We not only need to recover the Divine Feminine in general, but certain aspects of the Divine Feminine are specifically needed at this time. China Galland, in *Longing for Darkness*, focuses on the stories of the Black Madonna, Tara, Durga, and Kali. She emphasizes the need for not only the Feminine side of the God image but the Dark Feminine, which she connects to darkness, Earth, the deep underground root system that has been rejected, forgotten, and repressed. The Dark Mother allows us to go below the surface where everything is connected. Going deep down and back into the earth where we are all connected with each other, we can once again be in communion. For we are not here to control. We are here to be in communion with the larger Earth.

China Galland tells the story of Durga, the fierce, warrior Goddess of Hinduism who came to save the world when long ago it was threatened by demons. In ugly, messy, and seemingly hopeless situations, fierce, courageous, justice-loving Goddesses are needed who stand up for the poor. They empower us to have the courage to stand up for truth, love and compassion. This is not a magical rescue motif, for they need us to be their hands and voices in the world. Although hidden, marginalized, covered over and reinterpreted, this Dark Feminine Presence is found in many cultures. Its stories, images, and metaphors can inspire us and give us hope. Using the powerful practices that go with each of these Dark Feminine figures, we can become empowered to undertake difficult actions where needed.

Many people are having personal encounters with the Divine Feminine at this time in history. Bede Griffith, a Christian mystic of the 20th c. who lived most of his life in India in an ashram, met the Mother in his 80's. She came to him in a powerful bodily experience in which he almost died. She often comes in a physical, bodily way, but these Divine Feminine figures are also reappearing in more public ways. Sitings of Mary, Tara and Kuan Yin are coming with a message of love and compassion for all, and almost always in a natural setting. Mary has also expressed concern for our Earth home and what we humans are doing to it. The Mother is coming back to help us.

I experience the Divine Feminine very differently than I experience the God of my childhood or my beloved personal relationship with Jesus. For me the Mother comes through nature. She comes through dancing and body prayer. She speaks to me through animals, trees, and rivers. She often breaks my heart by connecting me with the suffering of animals, the suffering of Her body, the Earth. She is often powerfully present in Her absence, as in a church service that ignores the Feminine and Earth, yet still has a vase of roses on the altar. Or a male-centered liturgy that has a woman signing for the hearing-impaired. Suddenly I will know She is here and I will be moved to tears. She is always expanding my connection with all of reality so that now I feel so much more connected to flowers, plants, trees, wild animals and birds. She breaks me open to deeper and deeper levels of desire for the wisdom of nature. This wisdom, while I learn about it through reading, is mostly a wisdom that comes through participation with my body and I recognize it and follow my inner knowing. I resonate with this passage from Tibetan Buddhist Scripture: “As a bee seeks nectar from all kinds of flowers, seek teachings everywhere. Like a deer that finds a quiet place to graze, seek seclusion to digest all you’ve gathered. Like a crazy person beyond all limits, go wherever you please and live like a lion completely free of all fear.”

<p>Our dominant mechanistic worldview has feared and scorned mysticism, angels, imagination, the body, women, and Earth as a living Being.</p>	<p>The mystical tradition along with the recovery of the Divine Feminine holds great promise for a spirituality that can move us into the Ecozoic Era. This spirituality will have a kinship structure, a circle with all beings having equal value. Our images of God/Godde will include a continuous, creative Presence immanent in this historical world. This immanent Presence will create, nurture and sustain these kinship bonds. Our dominant mechanistic worldview has feared and scorned mysticism, angels, imagination, the body, women, and Earth as a living Being. A prayer written by Sophiologist Valentin Tomberg restores many of the lost aspects I consider essential. Pointing to the Sacred Marriage image, it offers a balance to the traditional Christian prayer, which begins “Our Father.” This prayer is called “Our Mother.”</p>
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Our Mother, Thou who art in the darkness of the underworld,
May the holiness of Thy name shine anew in our remembering,
May the breath of Thy awakening kingdom warm the hearts
of all who wander homeless,
May the resurrection of Thy will renew eternal faith even
unto the depths of physical substance.
Receive this day the living memory of Thee from human hearts,
Who implore Thee to fight the sin of forgetting Thee,
And are ready to fight against temptation,
Which has led Thee to existence in darkness,
That through the Deed of the Son,
The immeasurable pain of the Father be stilled,
By the liberation of all beings
from the tragedy of Thy withdrawal.
For Thine is the homeland and the boundless wisdom
and the all-merciful grace,
For all and everything in the Circle of All.

In closing, here are principles I would offer for reflection on spirituality in an Ecozoic Era:

- The Universe is the primary Sacred Reality.
- The inner life of the human depends immediately upon the outer world of nature.
- The planet Earth is our sacred home.
- Its kinship structure grants equal value to all sentient beings—all life forms—as manifestations of Spirit's creative energy.
- This structure is inclusive, emphasizing interdependence and interrelatedness without sacrificing uniqueness and diversity.
- Ecozoic spirituality is based on love and compassion rather than fear and guilt.
- It is respectful and knowledgeable of scientific discovery, the laws of nature, and the continuing evolutionary process.
- Its Images of God/Godde describe a creative Presence immanent in this historical world.
- This Presence is creative, on-going, changing and growing.
- It recovers the Divine Feminine, which has historically been so identified with the Earth, the Body, and Women.
- It understands life, death and rebirth as natural cycles.

- It accepts chaos, violence, pain and death as intrinsic to life.
- It faces the reality of imperfection as the way things are.
- It acknowledges the capacity for moral choice in human beings, recognizing their capacity for wrongdoing.
- Ecozoic spirituality is embodied.
- It recovers Eros and a sacred sexuality that helps us connect with the cosmic energy of the universe and inspires us to love life.
- It understands the dynamics of transformation, change and healing, using the gifts of psychology.
- It addresses the suffering of humans and all other life forms.
- It honors sacrifice redeemed from the distortions and abuses of hierarchic systems.
- It assumes the spiritual nature and inclination of all life forms.
- An Ecozoic spirituality seeks out and employs the myths and stories, images and rituals of 20 billion years of universe history.
- It gives humans ways to praise and express gratitude.
- It is participatory, non-hierarchical, and empowering.
- It honors and is skilled in using the languages of metaphor, poetry, dream, symbol, and imagination.
- Its forms of worship help us celebrate the daily and seasonal cycles of nature, and the transitions in an individual's lifespan.
- It addresses our intrinsic need to love and be loved and to have home and be at home in a mutually enhancing community.

The Clock

(For Grandpa Bob)

By Nick Roberts

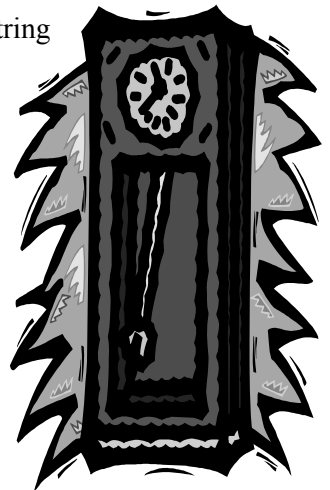
In the Eno I sat as the sun went down flaring
 Looking at the minnows swimming and twitching
 Darting beneath the surface weaving invisible stitching
 Between my toes, beneath my knees, bullfrogs in the distance blaring

Blaring to tell the valley that night had come a calling
 Perhaps it was time for me to leave my quiet escape
 Humidity hung its thick rope across my neck's nape
 Yesterday's storm had left leaves atop the water, the rest were soon
 to be falling

Falling as confetti blown high by the thunder
 Drifting downward to the symphony of the river's dry trickle
 Largemouth danced among the rocks, flashing silver sides bright as the toss
 of a nickel
 Sitting lonesome in this shallow pool I was left to wonder

To wonder why I allowed my mind to tangle itself in knots of endless string
 It was Grandfather's last sunset, perhaps that is why yesterday I could
 not leave
 If I could be there now with all my strength the sun I would heave
 Swinging back up to the heavens on its cosmic pendulum swing

I would swing it fast on a course so time could be forgotten,
 then delayed
 But I can do nothing; years turn to memories, flashes to an empty hall
 The vastness of the forest, the brevity of life twists a man until
 he feels small
 That day, Grandfather and I both heard nature's perfect clock chime
 and we obeyed



He obeyed the chiming of the grand clock to return into the land
The grand clock chimed for me to leave the river for the night
To place myself for another dawn back before the city lights
Now as I wake and only one of us remains I trust in the rhythm set by
 God's flawless hand

The rhythm set bids the moon rise and the sun depart
My wish is that, that evening together we witnessed the same thing
Sun fading gracefully, waiting to be carried back up upon the eagle's
 bronze wing
I sit now in the river my mind tangled and tattered, his last sunset burned
 into my heart



A God for the Ecozoic Era

By Alice Loyd

The New Story of creation calls for a new image of deity, one that confronts the culture's exploitation and offers a different model of being. While the creativity of the universe might be described without referring to a god at all, for me that view leaves a void. I commune with a source rather than only with its manifestations.

I think the telescopes we use to look at the universe tell us that God exists within rather than outside the body of matter. Deep inside the physical world is a non-apparent realm that is discerned rather than observed. I sometimes call it "Life," life itself, and someone else has called it evolution. It is a process that is inherent and comprehensive, existing throughout matter and inseparable from it. Occupying matter's space and participating in matter's fate, God is more than the body, but not less.

I call this small God, to establish the merit of this reality that goes unrecognized by those who worship the big God of force. Choosing to operate within human will, the inside God does not govern through domination. Acting from the least cell of the smallest inhabitant, it intervenes on a different level. Like an infant, it may wield a powerful influence on those who love it, but may not appear to triumph over an enemy. This is deity sharing power, emphasizing unity rather than difference. Its potency and genius exist outside a hierarchic scheme of values.

Advanced theories of science lend support to this theology, for they find intelligence at the cellular level. They find a stance of cooperation rather than force at work in life systems. Traits like strength in individuals are less important to ecologies than communication. Smaller members contribute, but they are not ruled. I think these discoveries say how God must be, and what humans are as well.

Wherever I look in the natural world, this is the God I see described. Only civilization fails to mirror its attributes, it seems, even though culture is an achievement of the physical venture. The potential of human beings, although unrealized, seems to be limited not by God, but by ourselves. What

God could do through our species—and what God may do yet—appears to be limitless. I fear that we won't evolve into co-creators of paradise, but I think our genes hold the possibility of ever moving toward the promise of fuller being.

Some people resist the thought that the creature participates in deity, interpreting it as equality with God. To be God, though, would require being the aggregate of reality. To say that I'm a demonstration is not to say that I am the whole. A more emotional objection is the theology's threat to the idea of God as parent. For me, there is parenting in this interpretation; and it

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comes through God's nearness. God is all that I need, supplied within my very being. With God resident in my body and in each molecule of the air, I cannot in fact be helpless or alone. Some may prefer a divide between divinity and whatever is mortal, but hierarchy is preserved in that arrangement. A God without embodiment supports civilizations based on domination. The subjugation of non-human species flows from the notion of their soullessness.

There are some occasions when the big God model might seem to fit, as when prayer is clearly answered. An outside force would be a less likely explanation, however, for a vitality that infuses everything would be a better source of miracles. The deity I'm describing is the force that moves the force that moves the oceans. Even a thought has strong momentum traveling the energy path of energy itself. Unafraid of sharing power, this God *is* the power it freely disperses.

I've thought about the likely morality of a religion based on these principles. Surely a God located within life would advocate actions that enhance life's liveliness. A sin might be to fail to notice flecks of light dancing on leaves. To spend many hours outdoors would have to be one of the commandments. A consuming lifestyle would be wrong because it replaces more life-enhancing activities. That it also depletes resources is only an additional indictment.

I think this understanding of deity is more marvelous than the conventional one because this deity continues to evolve. It is order emerging from chaos—and it is chaos. And it is the process. Both form and void, it is

particle alternating with wave. It is a wind that sweeps competitors as well as allies in its wake.

Microscopic and infinitesimal, yet infinite and immense, it incorporates rather than excludes. It is life, death, male, female, celibate, cohabiting and fertile. It is powerful because it is power. It is loving because it is love.

To say that common understandings about big God are not accurate is not to lay blame on the seers or the literature whose teachings have inspired us. No revelation came down into a society that already conformed to its standards. Mystics must receive images they can recognize, and teachers speak in the language of their hearers. Prophets spoke in words reflecting their cultures, using civilization's trappings as symbols of the ideal. Domination-oriented political systems were in place, and domination-oriented symbols were employed.

The science of today's frontier increasingly supports the concept of an inner realm. What we say about it must be informed by these findings and by the view in our telescopes. Who God is will be the same for us as for Abraham or for the ancestor of any people, but we must describe this mystery in words that reflect what we now know has been happening. Although it isn't easy to conceive or talk about an understanding of God through an unfamiliar paradigm, it is work that must be done. A paradigm shift is a spiritual event, which the first discerners will speak into history.

Two or More, Together

By Joanna Haymore

Shall we meet where the trees speak?
Where the Blue Ridge disappears in the mists,
Where red rocks sit in a circle,
Where sand meets the ocean
To hear, to listen, to share
The voices of stillness within.

Shall we gather where the Earth calls?
Beside the stream,
In the midst of the forest,
Beneath the stars and the moon,
Next to a camp fire
To the place, any place where *we* are together.



Climbing Uluru

By Bruce K. Kirchoff

The center of Australia is a vast desert, flat and dry. Near its center sits a massive stone monolith, Uluru, known to Europeans as Ayer's Rock.

Before I came to Uluru, a friend told me "I did not climb it. I stopped there while I was driving up the Stewart Highway between Adelaide and Darwin, on holiday. It was only a short detour, and though I thought that its mystique was just hype, I had to stop. It was directly in my path and it seemed foolish to ignore it. I was wrong, you know. It is something special. It just reaches out and grabs you. But I did not climb it. There are signs at the tourist stops saying that the Aboriginal owners prefer that you do not climb. The tourists almost all climb it. I think that they want to conquer it. I thought about it, and decided not to climb. I did the walk around it instead."

This was my first experience with Uluru, a friend's description of his experience with the rock, and his decision not to climb.

I arrived by air from Sydney. Flying over the Simpson Desert, I was struck by the immensity and beauty of the place. Though the plane was at a normal cruising altitude, the ground seemed closer than normal. Deserts can trick you like that. It is almost impossible to determine their scale. We flew at the same level as the clouds, and the wind swept great clouds of red dust into the air, almost to the height of the thin clouds of water vapor that hovered alongside the plane.

Uluru appeared out of this vastness as a sand-red boulder set in a pool of green. The last two years prior to my visit had been the wettest in recent memory, and the water that cascades off Uluru accumulates in pools around its base. This, and the buffel grass that was imported from South Africa as an erosion control measure, have created this effect.



“It does not look so big from up here,” commented the woman next to me. It looked big to me. I said so, and continued to watch until it disappeared behind the plane.

Once on the ground, my rental car retrieved and hotel arranged, I was off to see this rock that “grabs you.” My friend was right. It is almost physical. The desert is flat, but interspersed with dunes of red sand covered with scrub and small trees. These dunes always hold your gaze to within a short distance. You can see only a kilometer or two at best, except as you approach Uluru. Then the rock appears above the dunes, its base hidden behind the red sands, but its crown emerging in silence. Silence. Clouds moving across its

It spoke as
something outside
of time—not
timeless—but
outside of time.

face; its deep, almost dissonant, voice as it sings in silence. I slowed down. I do not mean in my car, for by this time I was out of the car. “I” slowed down. It spoke to me out of its timelessness in words that have no meaning – of beauty, and calm beyond human understanding. It spoke as something outside of time – not timeless – but outside time. It spoke as it touched our time through the slow movement of clouds across its face.

Oh how I wanted a connection with this rock! I wanted it before I arrived at Uluru, before my friend spoke to me, before I arrived in Australia. I wanted it since I knew I was coming here. I knew of this rock, of this place that sits near the center of this old continent, and I thought, “That is where I want to go. That is where I will find a connection to this land.”

My first act when I arrived at the base of Uluru was to take a short walk to some of the sacred sites along the Mala walk. A Mala is one of the ancestral beings from the dreamtime, and a type of small kangaroo (a wallaby) that used to live in the vicinity of Uluru, but is now extinct from the region. The Anangu, the local Aboriginal people and owners of the land, are hoping to reintroduce it. The brochures say, the Mala walk “ends at the inspiring Kantju Gorge. From the waterhole you can continue on the Base Walk” that leads around Uluru. Thus, without completely intending to, I began my circumnavigation. I wanted to find a spot to stop and sit with the rock, I wanted to photograph it, I wanted a connection.

It was dark by the time I finished my walk and returned to the car park. The climb, which begins from the same car park, was closed and most people had departed. Only three cars remained. The other two soon were gone and I was left to sit alone until sundown with the rock.

In the morning I drove to Kata Tjuta (the Olgas), a series of rock formations about 45 km West of Uluru. I spent the early part of the day, and into the afternoon, walking and sitting among the Valley of the Winds Track, feeling the presence of these hills and thinking about Uluru, and whether I would climb it.

When the Anangu watch the tourists climb Uluru they say that they look like ants. So they call them “minga” (ants). When I watched these minga on the previous day, I realized that one of the problems with climbing Uluru was that the climbers have no respect for the sacredness of the place. As I walked through Kata Tjuta I began to think that, perhaps, what the aboriginal owners object to is the lack of respect for the sacredness of Uluru, not the climb itself. I could see that there was no respect. It bothered me too. This place was sacred; I could feel that. I wanted to feel it more deeply. Perhaps I could climb with respect. Perhaps that would make my climb acceptable. After all, I was more worthy of the climb than the minga. I could climb and be part of the re-consecration.

These thoughts, and many more like them, came and went through me as I walked among the domes of Kata Tjuta. When a sacred place is treated as if it were not sacred, all of the relations between people and the place become distorted. Some people desecrate the place without a thought for what they do. Others, others like me, know that the place is sacred and tell themselves that their actions in desecrating it are somehow unlike all previous actions of desecration. These people tell themselves that, because the place has already been desecrated many times, it is all right if they do it to. Perhaps, or so they say to themselves, they can even help by desecrating with reverence. When a sacred place is treated as non-sacred, all its relationships become dysfunctional. Even well meaning people are pulled into this dysfunction and can, for what seems like the best of reasons, participate in the desecration.

When a sacred place is treated as if it were not sacred, all of the relations between people and the place become distorted.

I knew all of these things as I walked in Kata Tjuta. I knew that there could be no justification for my climb, but I would climb anyway. I would do it with reverence, but I would climb. That was my intention.

My walk over, I drove back to the Anangu Cultural Center near the base of Uluru to view the exhibits and wait out the hottest part of the day. At the Center I watched a video about how the lands of Uluru–Kata Tjuta National Park came to be in Aboriginal hands again. It is still a National Park, but the majority of members of the governing board are now Anangu. The video explained clearly how the Anangu had been mistreated and all of us watching felt shame, even though we had nothing to do with the mistreatment. It also made it transparently clear that climbing Uluru was not appropriate. Climbing was a violation of Aboriginal rights and feelings. Still, I thought, they allow it. They own the land and they allow the climb. Yes, they were forced into accepting the climb as a condition of reacquisition of the land, but they have the land now and they allow it. I would still climb. There was no justification for it, but if others less worthy than I could climb, I would climb too. With this determination I made my way to the car park at the base of Uluru, the starting point for the ascent.

Thunder clashed in the distance as I arrived. Scattered storms were dropping rain to the west and east. The storms to the east were the closest, but were hidden behind Uluru from where I stood. There were few people on the rock: two men in uniform near the bottom and several people in the process of descent. No one was going up.

The climb of Uluru was made safer and easier in the 1970's by the installation of a chain. This was during the time when the Anangu were in exile. The Anangu did not own the land when the chain was installed. It was part of the National Park, and though the Anangu were recognized as the rightful owners, the courts ruled that the land could not be returned to them. So steel poles and a heavy chain were installed to help the minga climb. The chain still exists today, and gets almost constant use. I am sure it has helped save more than one life.

Below the chain, is an area of free climb. It was steep going up, and I had to stop twice to rest. I was aware of the storms, but was determined to go up if the climb was open. Maybe the official looking men standing at the base of the chain would know if the climb was closed. I hurried to reach them.

As I arrived at the chain one of the men, a tourist-bus driver, turned to me and said, “You are not thinking about going up, are you? Look at those storms. They are coming this way. Do not go up now!” What was I to do? I had come this far. I wanted to climb. After much soul searching I decided to continue my climb. This was the right time. How could it not work? Should I go up and trust that I would be safe? Coming back tomorrow did not seem right. This was my time. Shouldn't I continue?

After much soul searching I decided to continue my climb. This was the right time. How could it not work?

As I stood there contemplating these things, the other driver said, “Look, if you are thinking about going, just go a bit of the way up. You can stop and re-evaluate then.” The other one said, “Wait till tomorrow. Sunrise is a good time to climb. They open the climb 20 minutes before sunrise. Come back and go then. Do not go now.”

By this time the climber the drivers were waiting for arrived. He was an elderly gentleman who looked none too stable or sure of himself. As he passed, I heard him remark, “Hey, I am not doing badly! Not too badly for someone who has had two strokes and recovered. How about that? I am not doing badly at all.” “Just so you do not have a third one right now,” one of the drivers chipped in as they encouraged him down Uluru.

I watched them pass, stood and thought, and continued up Uluru, alone. A hundred meters further up I stopped, sat and re-evaluated my situation. I felt Uluru below me. Now that I was sitting on its flank, I felt its presence enter my heart. This is what I wanted! I felt Uluru as a living presence below and within me. This is where I wanted to be. Did I need more than this? Could I stop here? There were two thunderstorms to the west. One was clearly not moving this direction. The other might, but it was quite a distance off. Perhaps there was time to complete my climb. The thunderstorm to the east was hidden behind Uluru. It was getting darker in that direction, but perhaps the storm was passing behind the rock and would not affect me.

Suddenly the wind tripled in strength! What had been a moderate breeze was suddenly a gale. My hat, which was tied around my chin, was nearly ripped off. I tightened the strap so that it was almost choking me. Still the wind tried to remove it. I tightened the strap again. Now it was on, but my

head was being pushed around so hard that I was getting a mild case of whiplash. I had to go down. My decision was made. I would not climb Uluru today. Tomorrow . . . well it was too soon to say. But my climb for the day was over.

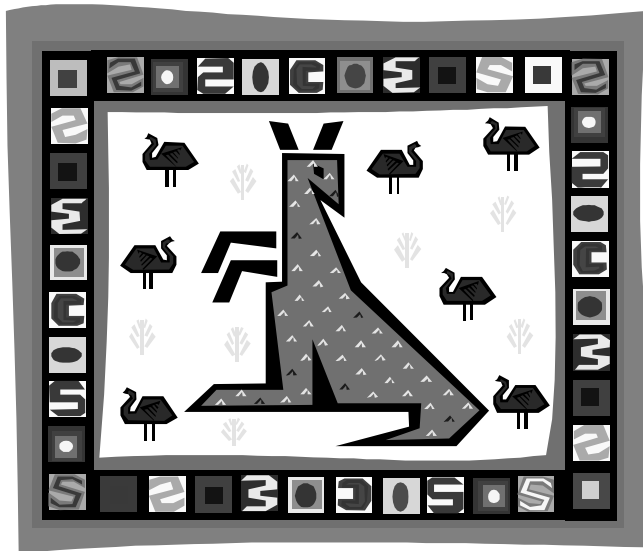
“Tomorrow” dawned cool and clear. I arose early and drove to the Mala car park for the 8:00 a.m. ranger walk. The car park was full of buses each crammed with tourists eager to become minga by climbing Uluru. I watched them rush out, and almost without a glance at Uluru begin the climb. I watched lines of them pass up and down the chain, so thick that it looked like a queue at McDonalds. I watched them run down the last 20 meters as they completed their climbs, arms held high in victory, almost cheering. I heard them say to each other after their descent “Well, at least now you can say you have done it.” I felt sick.

The ranger who led the Mala Walk was an Anangu man who told us some of the stories of the sacred sites at Uluru, and explained how the Anangu had learned that they had to live in two worlds. He had just completed his university degree in preserving archeological sites. He was working with others to start a database of the pictographs at Uluru, the first database of its kind in the world. He was also learning how to draw pictographs from his grandfather. They had recently begun to paint on the sides of Uluru again, after an almost 100 year hiatus.

Back at the car park I looked at the minga again. Their numbers had not diminished. The morning was beautiful. A perfect time to climb. I had plenty of time. I could finish the climb and still have time to catch my 2:15 flight. Now was the time to go . . . but I could not go. That is when my real ascent of Uluru began. It began when I realized that I would not climb. It began when I realized that to climb for any reason, even to climb with reverence, was to participate in the desecration, not just of Uluru, but of myself and of the Anangu. The only way to stop the desecration was not to climb. By not climbing I became, intrinsically, part of the solution. Not climbing was the only way to show reverence. Even if I was the only one who noticed, I could not climb. Although my act of not climbing felt completely insignificant in the face of all of the others who were climbing, I knew that I could not participate in the attitudes I saw. Climbing brought out the worst in the people who climbed. It destroyed their reverence for something that could only be viewed reverentially. To ignore this, to ignore the fact that Uluru

“reaches out and grabs you” is to kill something in yourself. I could not participate in this. I could not participate in people harming themselves. I have seen much too much of this in my life. I would not climb, and in this way, I began the assent that I continue today. The assent that I continue as I write this. The assent that I continue as you read what I have written. Please join me. Come to Uluru Take the Mala Walk. Listen to the Anangu.

Do not climb.



There's a Better World a-Coming

(To be sung to the tune of "Will the Circle Be Unbroken?")

By Jeanie Martin

I was standing by my window
On a warm and sunny day,
When I saw that these old mountains
Had been covered by a haze.

Chorus:

Will the circle be unbroken?
By and by Lord, by and by,
There's a better World a-coming
If we try Lord, if we try.

Well I walked down to the river
Where the waters had run clean,
Now the fish and frogs and turtles
Were nowhere to be seen.

Chorus

I headed up to the home place
To the farm that fed us all,
But pavement covered the landscape,
And there were plans to build a mall.

Chorus

Wait a minute, things are changin'
Folks are trying to live green.
They're committed to the children,
And generations yet to be.

Chorus



“Council of All Beings” at Green River Preserve

By Valerie Vickers and Kaleigh Oleynik

Each May my teaching team of seventh grade teachers from Greensboro Day School and about ten parents take our students to Green River Preserve, a beautiful private wildlife preserve and camp near Brevard, North Carolina. Sandy Schenck, the director and the mentors, chosen for their skills, abilities and love for children and the Earth, lead challenging programs that include primitive Earth and Native American skills, music and crafts, and rigorous nature hikes. This past May we decided to try a new type of evening activity based on the *Council of All Beings* program created by Johanna Macy and friends. The students made masks of their chosen plant, animal or element at school two days before our trip. They were to begin thinking like the being in their mask to portray its place in the world and what it might want humans to know. The mentors including Mike Sanderson, Herbie Walters, Snow Bear, Hawk Hurst and others worked with me to create a plan that was meaningful and effective for the entire group of seventy students. The magical experience is shared in an essay by Kaleigh Oleynik and in a poem that I wrote several days after the experience.

Council Fire of All Beings (Kaleigh Oleynik)

On our second and last night at Green River, we held a *Council of All Beings*. I think this was a moving experience for everyone because it helped us examine the world from all animals’ and elements’ perspectives, and even from the viewpoint of the world itself. We realized, from sharing and listening, how much the earth had given us, and it became clear as we spoke that humans were hardly repaying Earth for her gracious gifts. The sky told us of the pollution carried into her sweeping winds, the fire warned us not to misuse him, the tree told us of the fear it feels when humans destroy its forests with axes and saws, and the flowers reminded us how bleak the world would be without them. It seemed like everyone felt more connected with the inhabitants of the world by

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the end of the evening, after we had made our promises to the earth and discussed the problems we could remedy. As we celebrated nature to the low, steady beat of the drums and crackle of the fire, something amazing happened. Earth sent little messengers to dance and share the joy of the night with us, and we marveled and danced among the tiny creatures of light, knowing that we would never forget *The Council of All Beings*.

The Green River Earth Dance (Valerie Vickers)

Bah—buh da buh—da buh da buh
Bah—buh da buh—da buh da buh

Djembe rhythms punctuated the silence
Like heartbeats of the great Mother, Gaia.
While haunting flute melodies swirled into the darkness
As hawks soaring in an air current.
Low-pitched didgeridoos echoed calls like humpback whales
Vocalizing an ancient language.
The pulse of life resonated from one mountain peak to another.
The orchestra of earth musicians played with the whippoorwill.

Bum, ba bum ba, bum ba bum ba
Dum, da dum, da, dum da dum da

As the sun nestled into the mountains, dusk turned to dark.
A blazing campfire devoured wood of all sizes
Bending light and shadow as luminous ghosts.
Here, the young people danced with abandon.
Some played instruments; others shouted with joy,
Wildly celebrating their Counsel—
The Counsel of All Beings.
The place where all creation was given human voice.

Bum, ba bum ba, bum ba bum ba
Dum, da dum, da, dum da dum da

One by one, each human became their hand-made mask.
Each plant, animal, element told its story
A story of being—a strand in the Web.
The horse, the grass, the mountain, the bear,
The ocean, the monkey, the fire, the bird,
The mosquito, the tree, the frog, the sky,
The wolf, the snake, the fish, the river—
Each shared its life and was thanked by the others.

Bum, ba bum ba, bum ba bum ba
Dum, da dum, da, dum da dum da

Then the masks were dropped; human voices returned one by one.
Twelve voices were chosen to lift up their wisdom.
All climbed higher up the mountain to the sacred counsel fire.
Cedar smoke cleared the way as the special place was entered.
Sitting on the cool Earth amidst the trees and the rocks
The listening began—a profound listening that honored all life
With promises to the Earth to honor the Web.
Each one challenged to carry action to the great Circle beyond.

Bum, ba bum ba, bum ba bum ba
Dum, da dum, da, dum da dum da

Silently they came, in hundreds, then thousands
As they circled the sacred sanctuary
Where the Counsel wisdom was shared.
Bright enduring lights of tiny fireflies
Golden and neon green in the black thicket of the forest
Only rising to knee height in waves up the mountainside
Pulsing to the rhythm of the drums and the dance.
The awe, the wonder, the synchronicity.

Bum, ba bum ba, bum ba bum ba
Dum, da dum, da, dum da dum da

Had the Earth sent the dance of fireflies
As thanks for bringing voice to all beings?
Or was it coincidence to be there at the moment of emergence,
Experiencing the presence of the glowing ones?
Perhaps the Cherokee Little People brought the lights
Sharing their presence to celebrate earth/human connection?
How powerful the response of the Earth to the stories
A transcendent moment of wonder and love.

Bum, ba bum ba, bum ba bum ba
Dum, da dum, da, dum da dum da

The fireflies lit the Earth, while the stars lit the sky.
The young people left the forest and climbed down to the field
Aware that some great mystery had filled them with awe.
The dancing and marveling continued;
The magical mood lifted spirits even higher
As the Earth people, the fireflies and the Cosmos danced
A celebratory dance of communion.

Bah—buh da buh—da buh da buh
Bah—buh da buh—da buh da buh



Entropy

By Herman F. Greene

The law of entropy has been variously defined. The simplest definition is “a thing once used becomes less useful.” Try to burn a log that has been already been burned, or build a house with its ashes. Or who would want to buy an old pair of shoes, if he or she could get new ones? A thing once used is less useful.

More technically entropy is a measure for the quality of the energy in an isolated system. Lower entropy means that more energy is freely available, higher entropy means that less energy is freely available. According to the second law of thermodynamics, the movement from lower entropy to higher entropy is inevitable. At any time in the future, the system must have equal or higher entropy. In addition to being inevitable, this movement is irreversible. So, a log before it is burned has low entropy, but it has high entropy after it is burned. Its energy available to perform work will never be freely available again.

Upon reflection you might ask, “Why does entropy increase?” According to the first law of thermodynamics, the law of the conservation of energy, energy is neither created nor destroyed; it only changes form. So if energy is never lost, how can it be that the amount of energy available to perform work decreases? Where does the available energy go, if it is not lost? A partial answer to this puzzle was formulated by Ludwig Boltzmann more than a century ago, when he interpreted the increase in entropy as the increasing disorganization of matter within an isolated system, an irreversible movement toward maximum disorder and chaotic dispersal.

This interpretation of why entropy increases within an isolated system may also be illustrated with a log. If a log were placed in the corner of a sealed room filled with air, the energy in the room initially would be very unevenly dispersed. Most of the available energy would be in one corner of the room, in the log. If the log were burned, however, its energy would be randomly dispersed throughout the room. Energy would move from an ordered, concentrated state, in the log, to a disordered state dispersed throughout the room. Eventually the room, in



theory, would reach its equilibrium state where all the available energy would be randomly dispersed throughout the room. No energy would have been lost in this process, but in the equilibrium state, no energy would be available to perform work. (Interestingly, the theory of entropy requires that this happen over an indefinite period of time even if the log is not burned. The log left alone in the room would decay and its energy would eventually be dispersed with the same ultimate result as if it were burned.)

These characteristics of the second law, the necessary movement from lower entropy to higher entropy within an isolated system and that this movement is irreversible have caused many people to reflect deeply on its meaning. In the scientific world, expressed as a formula, the law of entropy has become a useful tool for measuring the amount of energy wasted in a thermal process, such as an power plant or an automobile engine. Some would argue that this utilitarian use of the concept of entropy is the only useful one. But what we are more concerned about are the larger speculative meanings given to the concept of entropy. These are the ones that have shaped human imagination.

Perhaps the most famous speculative meaning given to the law of entropy is that it forecasts the coming “heat death” of the universe.

Perhaps the most famous speculative meaning given to the law of entropy is that it forecasts the coming “heat death” of the universe. According to this view, it is thought that the inexorable workings of the law of entropy will result in the dispersal of all energy in disorderly fashion throughout the cosmos, assuring that, in the words of T. S. Eliot’s *“The Hollow Men,”* the world will end “not with a bang, but a whimper.”

Another popular meaning given to the law of the entropy is that, leaving the universe aside and looking only at Earth, the progressive increase of entropy will inevitably lead to the exhaustion of the resources of Earth. People espousing this view have concluded that, while there may be no ultimate solution to this problem, later is better than sooner. Thus, they conclude the clear message of the law of entropy is that we should not squander our scarce resources; rather, we should conserve them to prolong life on Earth, as we know it. People of this view criticize modern technology as a force that is rapidly and exponentially accelerating the increase in entropy in Earth’s system.

Less dramatic, but perhaps equally provocative thoughts about entropy have included the thought that the law of entropy introduces the concept of the directedness of processes within the universe, and thus of temporal succession. In other words, as Sir Arthur Eddington said, entropy is an “arrow of time.” Some have taken this to mean that the flow of time from past to present to future, can be accounted for as a function of entropy. The past is the past because the macroscopic degree of entropy in the universe is lower in each moment of the past than in each succeeding moment. According to this view, it is the progression of entropy that makes time, time. Hence our experience of time is an interior awareness of the progressive increase in the universe’s entropy. A correlate of this understanding is that we cannot go back in time (science fiction notwithstanding). The increase in entropy is irreversible, and hence time as well.

Exponents of the entropy-thus-time-irreversibility viewpoint have found support for their position in the big bang theory of the universe. The law of entropy when introduced in the 19th century caused difficulty for cosmologists who had seen the universe as eternally existing (proceeded however momentarily by God). The question for these cosmologists was how could one reconcile a timeless universe, with the inexorable law of entropy and its requirement that over an infinite period of time, the universe (other than in a equilibrium-state or random/chaotic dispersion of energy) cannot exist? The big bang theory seemed to confirm time’s arrow and correspondingly entropy and time irreversibility, albeit perhaps with the corollary depressing confirmation that the ultimate meaning and direction of the universe was toward random chaos and loss of all creative energy; *ergo*, in the words of Macbeth, “a tale told by an idiot, full of sound and fury, signifying [(or, at least tending toward)] nothing.”

Caught as we are, in the in-between times, of the present, one other meaning of entropy deserves comment. This is the thought that the law of entropy introduces into our cosmic understanding of the universe the concept of qualitative change, and here we have to depart somewhat from the view that the progression of entropy is simply a matter of particles of matter moving from ordered to disordered states. The meaning given to entropy under this view is that when Humpty-Dumpty falls never to be put back together again, the problem is not that we have a difficult time retrieving and pasting back together the little, chaotically dispersed fragments of egg shell, but that there has been a qualitative change in



It is not that it is difficult to put Humpty Dumpty back together again, it is that we cannot.

Humpty-Dumpty. It is not that it is difficult to put Humpty-Dumpty back together again, it is that we cannot. Thus, in this view, matter is consumed in the inexorable progression of entropy and turns into something that cannot be reconstituted as matter/available energy. Thus, some would say that the laws of thermodynamics require the understanding not only that, in a closed system, we cannot create energy (because the amount of energy is forever fixed and can only change in form), but also that we cannot from dispersed energy create matter (*i.e.*, once energy is dispersed in a high entropy state, in a closed system it remains in its equilibrium state of dispersal).

This aspect of “qualitative change” is particularly important in its implications. It introduces a third component of the law of entropy, the first two components being (1) the inevitable movement from lower entropy to higher entropy, and (2) irreversibility. The implications of qualitative change are not all negative. Exponents of this view have extended the meaning of entropy from that of responsibility for time, to that of accounting for evolution. Evolution in the universe, it is said, cannot be explained by the laws of mechanics, that is by changes in the position of particles. Evolution involves qualitative change in the universe. What is now is not the same as what was. It is qualitatively different. Thus, entropy is taken to account for novelty, states of matter can come into being that are different from what preceded them, and, hence, the progression from the big bang, to atoms, to galaxies and stars, to the various elements, to minerals, to life in its various forms, to the human, and even to progression in culture. Each of the qualitative changes in the universe has involved the expenditure/dispersal of energy and cooling of the universe, and correspondingly an increase in entropy. Indeed, all creative activity, all work that we as humans do or that is done by any other plant or animal or by any other force in the universe involves such energy expenditure. While the concomitant increase in entropy might be viewed as the dark side of existence, a malevolent curse, it may also be viewed as grace, the source of all creativity/activity, that our actions and the universe’s actions may make a difference—the qualitatively new is possible. According to this view, entropy is the engine of evolution.

So what are we finally to make of our reflections on the second law? What implications does it have for ecology, for human life, for Earth, for the universe? Is the biosphere of Earth a closed system in which the law of entropy requires that we recognize the limitations of our resources and take on a survivor's mentality? Or more subtly, since we know that Earth is an open system at least as regard's the ingression of sun's energy, must we recognize as Nicholas Georgescu-Roegen has said that the limitation we face is not ultimately that of energy, but of the finite stock of mineral resources in the Earth's crust? The sun's energy is a high entropy resource as compared to the low entropy resources of Earth's minerals. Or is it possible, following the apparent logic of Einstein's theory of relativity that, since energy and matter are two sides of a coin, we may one day convert solar energy into matter just as surely as we can now fuse atoms to produce the energy of the sun? Does the law of entropy require that we conceive of the ultimate destiny of man as being to inhabit space or at least, to overcome the Earth's entropy increase, to harvest the resources of space? Or is the primary message of the law of entropy not one of cosmic destiny and extraterrestrial being, but one of humility—that we humans are limited as a species by the law of entropy and our relatively closed terrestrial system . . . limited as to capacity, and ultimately as to our time on the cosmic stage?

In such a state of humility, reflection on the law of entropy could enable us to see that we are now living off our valuable and largely irreplaceable low entropy natural capital, when prudence requires us to live off of our income. Our income is the energy we receive from the sun. If we were to live off of our relatively high entropy solar income, however, like a recalcitrant debtor we would have to change how we live. We would have to change everything. Not to change would bankrupt us and nature.

What is it in us that supports such a spendthrift existence, makes us so careless of present and future generations of all forms of life and of Earth's natural systems, and blinds us to what is obvious?

Entropy, the second law of thermodynamics, . . . something to think about.

True Process: Ecological Way of Life in First Nature

By Shi-yan Li

According to process philosophy, process is essential, relevancy is ubiquitous, and entities in the universe are not limited (closed systems), so our universe is not a composite of isolated systems.¹ In an isolated system entropy is always increasing by second thermodynamic law. Since entities are not isolated systems in the universe, the character of the universe is not isolated system, entropy is not always increasing, and entropy is in equilibrium in the whole universe. On Earth, however, technology and economy bring about high organization for human life, and result in increasing entropy in nature. This increasing entropy is what constitutes the environmental crisis that we human beings have to confront now. From the perspective of process philosophy, perhaps we could find better ways to resolve the problem of environment and development. Ecological way of life will be the true process in nature for human beings as they enter the Ecozoic Era.

Ecological industry is the best way to resolve environment and development. It learns from ecological process in nature to work hard eliminating the increasing entropy of technology. Based on Newton's science, modern technology is of mechanics and is linear. After *mechanical* technology satisfies human need, its process ends, and it is hard to return to the natural process. So between human beings and nature, limit (a closed system) is the result because of current technology. With progress of technology and development of economy, this limit is becoming stronger and stronger. The more technology advances, the more economy develops, the better human beings live, but this kind of limit between human beings and

¹ **Editors Note:** "Process is essential" is related to Berry and Swimme's concept of "self-organization"; "relevancy is ubiquitous" is related to "communion"; and "entity" is related to "differentiation." To say entities are not limited or isolated is to say they exist in communion with other beings. To say that process is essential means that entities have an adventurous or questing nature and that the static connotation of speaking of equilibrium states in the universe is misleading. The universe is dynamic and the dispersed or high entropy states of energy are always being overcome by the self-organizing, non-closed aspects of entities existing in relatedness (communion).

nature sets up an isolated system. Since entropy is always increasing in an isolated system, environment crisis is hard to avoid. However, in *ecological* industry different technologies connect, every technological process ended may continue and form an ecological technology system. So, no process ends, no limit exists, especially, no entropy increases. This is a hope for resolving environmental crisis that result from modern technology. Your wastes is my material, my wastes is its material. This is unbroken process. The definition of “resource” indeed has a new meaning by process philosophy, that is, resource is only energy form existing for different subjects; environment is an inter-dependent life community exactly.

In *ecological* industry different technologies connect . . . and form an ecological technology system.

Ecological economy helps us understand the environmental issue from perspective of the relationships between ecosystems and economic systems. Economy sets up its value because of limitation. Human need is not limited and since it is hard to satisfy human need, limitation exists. For satisfying human need of value, human technology puts forward (imposes) economical process on nature. Ecological economy is one that uses economic ways to analyze natural value in ecological system and brings forward the ecological process into economic system. In this continued process, human sustainable development is researched by studying ecological economy.

Human ecology reminds us that human beings belong to ecological system and should return to ecological process. Originally, human beings resulted from the ecological system in nature. Technology is the means by which human beings connect with nature. With development, technology provides a home for human beings, this home becomes bigger and bigger and comes into being “the second nature,” that is technical sphere which is made by human beings. Although this big home is very comfortable, it cuts off linkages between human beings and nature, and makes human beings alienating from nature, so there is the environmental crisis. We human beings should follow human ecology, to live by ecological ways, to produce by ecological technique, to develop society by ecological economy. Returning to first nature, returning to ecological process, this is sustainable development for us human beings.

Be Born at Last!

By David Reese

Full time—Ripe time—Complete term time.

Weary, welcome end of this planned-for newness.

No smooth, easy, free dropping passage for this awkward birth.

Spasm stretched muscles, pain jerked limbs pushing,
wrenching its bloodied way toward our mixed dreaded and
deferred hope; moment for knowing.

Elemental bits forming out of chaos heat

Coalescing energies forms within forms surging, swirling,
penetrating, uniting in creation's freed energy ecstasy.

Enticed, evoked, beckoned, called into useful form and name.

Led stumbling on. Driven out from familiar frameworks
for knowing.

Restless, discontent energized seeking toward deeper

patterned clues that offer
meaning relief to this quenchless thirst, this unfeedable hunger.

Impatient prayer! Faithless, untrusting appeal!

NOW! Let it be done with! Finished! Over! Be Born at Last!

Forgetful of that larger time. Amnesied loss of paced rhythms set into

evolution's spiraling ascent toward some conscious
shared newness
of creature with Creator.

The Center for Ecozoic Studies

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Statement of Purpose

The Center for Ecozoic Studies (CES) is a research and education organization for the realization of the Ecozoic Era. Through critical reflection, story and shared dream experience, CES seeks to enable the creative advance needed to bring into being a new mode of human civilizational presence, and also the discernment of the practical steps leading toward the Ecozoic. CES is dedicated to the principle that we live in a meaningful continuously evolving universe. In such a universe, the Ecozoic Era is a process concept—not something to be arrived at, but something ever to be created. Its hallmarks are inclusiveness, interdependence, and appreciation; communion, differentiation, and subjectivity; and sensitivity, adaptability, and responsibility. It crucially involves more just and cooperative relationships among humans, as well as transformed relationships of humans with the larger natural world.

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