
Re-Storying Biodiversity by Way of Science

by Connie Barlow

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The evolutionary epic is my creation story, and the diversity of life is its greatest achievement. This is a credo in which intrinsic value of biodiversity is taken on faith, but a faith that has an element of logic to it and can be communicated. More precisely, the credo asserts that today's panoply of life is the glorious manifestation of four billion years of continuity and creativity. The living beings that grace this planet are the legacy of uncountable generations that came before and the precious heritage of those that will follow. The diversity of life thus fills the present with echoes of deep time.

Overall, this credo is a good deal more expressive than the simple refrain that species have intrinsic value. And it is a lot less likely to prompt a rational refutation than is the claim that species have a "right" to exist.

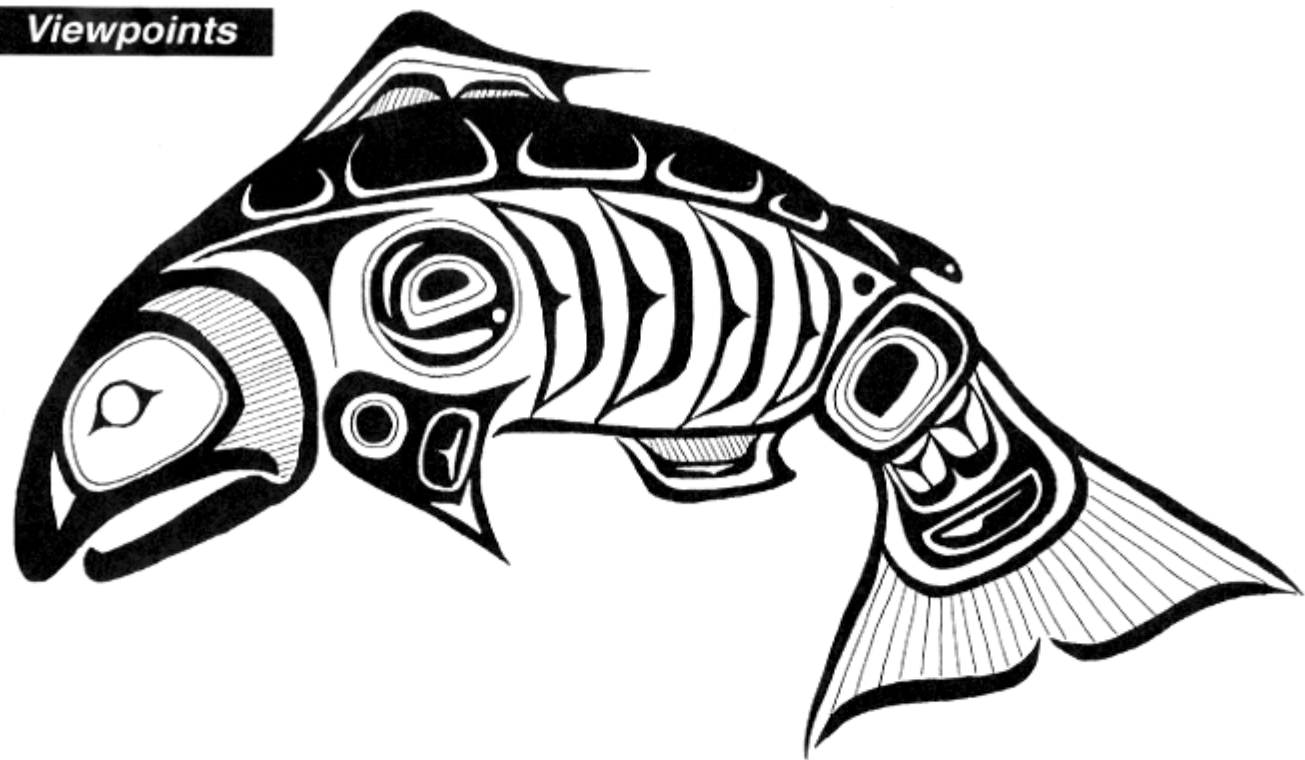
Biodiversity is sacred.

Why?

Biodiversity is sacred because it is my religion to believe so. The evolutionary epic is my creation story, and the diversity of life is its greatest achievement.

For many of us, the diversity of life is our scripture. It is through the study of living beings and their fossil forebears that the story of creation has been revealed and interpreted. To behold another species with reverence is no less a religious act than to read the Bible in a pious frame of mind. To lose a species through apathy or avarice is no less tragic than to tear a page out of every Torah or delete a passage from every copy of the Koran.

"The evolutionary epic is probably the best myth we will ever have." Edward O. Wilson made that statement nearly twenty years ago in his book, *On Human Nature*, and he stands by it today (see the box of conversation with Wilson). Myth as falsehood is not the usage intended here. Myth, rather, as a grand narrative that provides a people with a placement in time—a meaningful placement that celebrates extraordinary moments of a shared heritage. Those of us who have not only learned but embraced the scientific story of our roots know ourselves to be reworked stardust, biological beings with a multi-billion-year pedigree. We know these facts deeply, and for us the story evoked is as empowering as any tale that has ever come alive in the flames of a fire at the mouth of a cave or in the vaulting echoes of a cathedral. For us, the history of life and of the universe as told by science becomes more than a sequence of strange and arresting events. It becomes our personal and shared story, our creation story, our sacred story.



To call this story the “evolutionary epic,” as Wilson has done, is to leap from textbook fact into meaningful extension. The evolutionary epic, in the hands of a scientifically faithful storyteller, is not fiction or fantasy. It is nonfiction in the same way that Wilson’s exquisite books—*On Human Nature* and, more recently, *The Diversity of Life*—are nonfiction. The best nonfiction begins with a foundation of fact and then calls upon the mind to find a story in it, a compelling and beautifully rendered story.

Wilson, myself, and many others are convinced that wider and deeper awareness of the story of life in its mythic majesty offers enormous opportunities for fostering biocentric ethics. The evolutionary epic also offers as-yet unexplored possibilities for spiritual enrichment, foremost because it can re-story the natural world. I don’t have to disingenuously will my way into a Native American mind-set while I hear about Raven or Coyote creating this or that. I don’t have to put my intellect into cold storage or search for a strictly metaphorical satisfaction when I am told that a sky god created in his own image a fellow called Adam. And I don’t have to separate my spiritual rendering of the world from the frame that demystified thunder.

Instead, there is a story that is real to me, yet magical at the same time. And it can be told in many, many ways. The full story begins with a community of microbes working together for eons to develop the nutrient cycles that still run the biosphere. Biodiversity emerges. Eventually, some of those microbes merge into an altogether new way of being: ameba and kin. Biodiversity blossoms. Later, ameba and kin usher in all the jellyfish and starfish and worms and clams and crabs and fish and bryozoans of the sea. Biodiversity blossoms again. The scene shifts to the land, where lichen and isopod, amphibian and fern emerge—despite the hardships of survival in thin air. Conifer trees, reptiles, beetles, dinosaurs, ants, flowers,

mammals, butterflies, and finally grasses grace the earth. Biodiversity is in full bloom. Somewhere in this sequence, after the passing of the ichthyosaurs and mosasaurs (the “dinosaurs” of the sea), a bearlike creature slips back into the water and becomes whale. Somewhere along the way, a puff of silk is caught on a breeze and spider takes to the air.

The possibilities for story are endless. So those who would recount the scientific story of life in epic form must be masters of compression. They must select from the voluminous facts just those that can best reveal the saga of our coming into being and of the lush diversity all around. A drama of fortune and crisis unfolds. There are turning points, close calls, moments of grace or exceedingly good luck. There are ancestors and heroes galore.

The great work of transforming textbook fact into mythic story is just beginning. The best such storyteller I have encountered is the team of Brian Swimme and Thomas Berry. In their *Universe Story* they draw from both worlds—the plot derives from the various sciences, while the archetypes and even the names of the heroes are borrowed from time-tested stories in the humanities. Here, for example, is how Swimme and Berry convey the terrible richness evoked on Earth following the birth of the first predatory being. *Kronos* they call this being, after the character in Greek myth who swallowed his own children alive. *In the future, pale blue skies would shriek with the death terror of pteranodons seized by the quickly stabbing rows of knifelike teeth that lived in Kronos’s descendants’ mouths. Springboks would learn to eat with their ears ever attentive, lifting their heads silently at the slightest fluff of sound, the doe eyes perfectly still with fright, then exploding in a zigzag escape from the leap of a great cat who had learned its hunting skills from a long line of predators brought forth by the ancestral Kronos. Black eagles soaring with talons outstretched,*

A CONVERSATION WITH EDWARD O. WILSON

CB: In your 1978 book, *On Human Nature*, you wrote, "The evolutionary epic is probably the best myth we will ever have." Does that statement still hold?

EW: Yes it does.

CB: We normally think of myth and science in opposition. Why, then, your emphasis not just on the facts of evolution but on a mythic rendering of those facts into epic form?

EW: I believe that the epic is the human, narrative mode of thinking with the greatest grandeur. I believe that humanity must have an epic—must have its epics, plural. An epic is a grand narrative, usually in poetic form, that utilizes archetypes in explaining a theme that engages all of the nation or all of humanity. To give you an example of how deeply I believe in the epic narrative, I wrote *The Diversity of Life* in epic form. The archetypes include cataclysm, rebirth, the summoning of heroes to lead us out of this worldwide crisis in biodiversity. The book closes with the archetype of the new world discovered. It's written deliberately in epic form. I build a tension in the first chapters: a storm strikes the Amazon [near where he is working], but the forest bounds back. Krakatau explodes; one of the great volcanic eruptions of the century wipes out an archipelago, but the cinders are recolonized. Massive extinction events have occurred in the far more distant past, but they were not enough to destroy the crucible of evolution. Now the new menace, the sixth great extinction crisis is upon us.

CB: And in your books and public appearances, you are summoning the heroes to take on this new crisis—calling upon each of us to become a hero in some small way. I remember a wonderful public lecture by Norman Myers. After a thoroughly depressing assessment of ongoing species extinctions, Myers completely shifted the mood in that room. He predicted that whatever generation takes charge and puts an end

to the biodiversity crisis will be viewed as heroes for hundreds, even thousands of years to come.

EW: That's exactly right. We can make this into a heroic age.

CB: To launch a heroic age, do the writers and orators of the evolutionary epic need to employ a heroic style?

EW: Yes. There has to be a high, serious style developed for the evolutionary epic. Epic is, after all, a poetic form. It's an art form. This is why we prefer the King James version of the Bible and why Shakespeare resonates so. But we have to use a modern genre of style; it can't be archaic. It will not do to simply write a pedantic or a plainly worded book that tells the facts and the evidence. Because where does that leave you? It's only when you strike the inner chords, the mystic chords of emotion, that you are making it possible to transfer some of the energy and seriousness that defines provincial religious thought to a secular form. I don't see the poetry or literary style as just a contrivance to accomplish something—like moving a ton of earth or building a flying machine. I look on it as absolutely essential to the integrity of the human mind. So what we must have is poetry within the scientific, physical worldview.

CB: That means we need the humanities, too.

EW: The humanities could in effect continue to do their thing, but they would have vastly richer material to work with—grand themes—because the real world, the universe—from black holes to the origin of consciousness—offers far more complex and grander themes than does traditional theology.

CB: A telling of this science-based story must come out of a depth. It must come out of a depth in which there is no artifice because it is so *real*. It's not the storyteller thinking pragmatically that our culture has a need for the evolutionary epic and that therefore they'll have a go at creating it. It's rather: I'm a believer, you're a believer. We are abso-

lutely moved by this story.

EW: Right. And when readers encounter the story, they don't think to themselves, "Well, if I really need it, I guess this could be a substitute for such and such a core conception from religion." They *feel* it. And they *care deeply*.

CB: My own story is an example of that. I've been an environmentalist for a long time, since college days and intuitively since childhood. But until a few years ago, I never connected that commitment with anything. It was just an ethic hanging out there on its own. Even when I read Julian Huxley's great books promoting the evolutionary epic as a religious worldview, I didn't see the connection, in large part because Julian didn't see the connection either. He couldn't have, as the environment was not a big issue in the first half of this century, when he was writing. But during the last few years, especially since I've encountered the ideas of Thomas Berry, the evolutionary cosmology and my environmental leanings have merged in a big way. And it's not just general environmental concerns that do it for me. It's the biodiversity crisis.

EW: Building the evolutionary epic, telling the story: this is our best way to reanimate the deep emotions that are innate to the human mind, having evolved over thousands of generations in a religious context. The self-assembly of complex systems, the evolutionary process: this is the epic we can create by exploring the material world. And there's so much left to explore. It is of such profound and Olympian magnitude.

CB: What exactly is it about the history of life that prompts you to regard it as an epic?

EW: The flat, superficial answer is that components of evolution—the great quantum steps—can be shown to represent progress of a sort, and therefore can be construed like a story, replete with crises and emergence into new worlds—the sea, the land, the air—but that's the flat answer. The deep answer has to do

with the way the human mind has evolved to work. And that entails archetypes. It entails a compulsion to organize experience in terms of narratives. We cannot think without narratives. We have an urge to create transcendental narratives, which justify human life on Earth, which justify our tribe, our nation, which empower it by recounting heroic episodes of the kind that bound it together and will bind it again, that will meet any crisis. The adaptive significance of the propensity toward archetypes, epics, is clear. Overall, you cannot ask why the evolutionary story is an epic without rephrasing it as, Why do we wish to see the evolutionary history of the world as an epic?

CB: Teilhard de Chardin, Julian Huxley—they tried decades ago to get this thing moving. But back then an evolutionary cosmology was more an intellectual offering—an alternative religion that could give peace of mind to those who couldn't believe in the old stories anymore. But now a new push for embracing this worldview is desperately needed because it can infuse the emerging concern for biodiversity—which, at the moment is mostly an ethic without a mooring—with a sense of the sacred, and with all the zeal that that implies.

EW: We may be approaching a critical mass of literature and thought. With just enough people concerned, and kneading and pushing, something may finally happen. ●



illustration by Douglas Moore

orcas circling and confusing before shredding the great whale and darkening the seas with its blood, bats whipping through the night to devour thousands of churning insects—none of these would have trembled forth had not Kronos dared to probe this path.

Told around a campfire, read to a child at bed-time, or dramatized and sung in a cathedral, the evolutionary epic offers endless possibilities for nurturing the generosity of spirit essential for putting an end to the sixth great extinction crisis. Some of us may come to identify so deeply with the continuity and creativity of this story that, as with Swimme and Berry, a celebration of the epic pours forth. To become celebrants of the universe story is, in fact, what these two seers offer as a species-wide image of ourselves. In a sense, the diversity of life stores the outline of the narrative of evolution in a planet-wide gene pool; but—as far as we know—only humans are *conscious* of that story. Only humans who have assembled and interpreted the fossil remains of trilobites and dinosaurs and giant ground sloths can celebrate the lines that have vanished—cons of particular stories exhumed from the grave. We can thus remember and honor those who came before. Eerily, too, we can look around today and know who among the finned and feathered and foliated are truly the Old Ones.

For example, encountering a flush of avocado-green *Equisetum*, I am apt to conjure a foot-long Carboniferous dragonfly perched on a stem. A forest of tall pines or firs calls up a memory of their long-gone partners in evolution: the snake-necked dinosaurs. The widely spaced thorns of a mesquite or locust or hawthorn still whisper of the times not so long ago when broad-mouthed mastodons and ground sloths roamed this continent.

Look! There goes an Old One. Possum. Possum gives birth to fetuses and suckles them in a pouch on her belly. She has no close kin in this land. Almost all of Possum's relatives live in Australia. But once upon a time, Australia and South America and Africa and even Antarctica were all joined in one great supercontinent: Gondwanaland. Throughout that vast landscape wandered Possum's ancestors. They crept out of the trees each night to hunt insects and worms while the dinosaurs slept. Notice how Possum still stops and listens for the footfall of a great beast.

Look! There stands an Old One. Ginkgo. Ginkgo has no close kin at all, the last of a long line. Many millions of years ago, Ginkgo lived everywhere. But then the climate changed and other trees came, and Ginkgo found refuge only on the other side of the world and finally in only a few temple gardens of China. Today we honor Ginkgo in cities everywhere because Ginkgo remembers how to breathe air heavy with carbon dioxide. Look carefully at the strange pattern of branches and twigs, and consider how much effort it took trees to learn the best ways to accept the gift of the Sun.

Look! There clings an Old One. Lichen. Lichen pioneered the land way of life. Lichen turned rock into soil, then ceded the landscape to the stems and roots of plants. Today Lichen lives only where nobody else will—as spots and rings on bare rock, as a crust coating the driest deserts, in patches on cold mountain peaks, on the rough trunks of trees. Contemplate the strength that such delicacy brings forth. Notice what comes of great patience.



By way of the evolutionary epic, this is how we can perceive biodiversity in the abstract, biodiversity in its particulars, and the biodiversity that came before. It is crucial, however, to realize that we are not the only species with a special take on perception. We may see stories in the landscape, but honeybees and kestrels can see in the ultraviolet, rattlesnakes in the infrared. We send missionaries into space to bring back a vision of the whole, magnificent Earth, but migratory beings of avian, reptilian, and even arthropod (as in Monarch Butterfly) lineages sense Earth's magnetic field as an everyday sort of thing. Nevertheless, let us not forget that it is by way of our own creation, science, that we have been humbled, learning something of the ways of these other realms, or other *nations*, as Henry Beston so beautifully described them decades ago.

The diversity of life in itself thus offers a diversity of perception. As Brian Swimme portrays the tragedy of extinction, the loss of a species is a loss to the universe of a particular way of *perceiving* a particular part of the cosmos. Gone with Ivory-billed Woodpecker is Ivory-billed Woodpecker's way of perceiving the Louisiana swamp forest, the buttressed cypress in that forest, the fat grub beneath the bark, the beauty of an Ivory-billed mate.

The history of life transformed into the epic of evolution: isn't this a dangerous path? If we start talking about evolution in mythic terms, won't that aid the creationists in their quest to rid high school biology courses of Darwin's dangerous (and blasphemous) idea? Maybe so. But frankly, from my own high school exposure and what I have seen of standard textbook fare today, I'm not sure the loss would be lamentable. How many believing Christians or Buddhists or Hindus or Muslims would there be if the traditions had been transmitted to children in vapid prose, in a classroom setting devoid of ritual and participation, and with the threat of a multiple-choice exam at the end of the week? Rather, how many adolescents and young adults might actually seek out *The Story* if it were in some way surreptitious, as Hermann Hesse and Lao Tzu and Black Elk were when I was in college?

Consider, too, that a goodly and growing portion of the Christian community, including fundamentalists, are natural allies of evolutionary epicists (or epicureans—the movement still lacks a name). The Christian Green hold biodiversity dear because it is God's creation. Godly creation or evolved creation: it matters not, so long as we agree on the sanctity of all that was created. Former foes can then join hands for a common cause passionately felt.

It is thus a time of both crisis and opportunity. The biological richness of this planet is at stake. And so we humans fortunate enough to be alive at this slice in time are summoned to become heroes. We can rely on the storytellers just now emerging and those yet to come to give us our bearings, to call forth our courage, and (just as important) to urge us to break from time to time into joyful celebration of all that is still here to behold. ■

References

- Huxley, Julian. Excerpts from his various books appear in *Evolution Extended: Biological Debates on the Meaning of Life*, edited by Connie Barlow, 1994, Cambridge: MIT Press.
- Swimme, Brian, and Thomas Berry. 1992. *The Universe Story*. San Francisco: Harper Collins. Swimme's point about extinction and the loss of perception is made in tape no. 3 of his video series, *Canticle to the Cosmos*. His newest video (and companion book) is *The Hidden Heart of the Cosmos*. For information, 1-800-273-3720.
- Wilson, Edward O. 1978. *On Human Nature*. Cambridge: Harvard University Press.
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Connie Barlow's Green Space Green Time: The Way of Science will be published this fall. The wildest part of this essay was written on a lichen-covered cliff overlooking a tributary of the upper Gila (Dave Foreman and Aldo Leopold's country).