

The Universe Story and Planetary Civilization

Mary Evelyn Tucker and Brian Swimme

As we see our present interconnected global challenges of widespread environmental degradation, climate change, crippling poverty, social inequities, and unrestrained militarism, we know that the obstacles to the flourishing of life's ecosystems and to genuine sustainable development are considerable.

In the midst of these formidable challenges, we are being called to the next stage of evolutionary history. This requires a change of

BRIAN SWIMME received his PhD in mathematics from the University of Oregon and is on the faculty at the California Institute of Integral Studies, in San Francisco, where he teaches courses on evolutionary cosmology to graduate students in the humanities. He is the author of *The Universe Is a Green Dragon* and *The Hidden Heart of the Cosmos*, coauthor with Thomas Berry of *The Universe Story*, and creator of the DVD series "The Powers of the Universe" (brianswimme.org).

MARY EVELYN TUCKER is a Senior Lecturer in Religion and the Environment at Yale University, holding joint appointments as a research scholar in the Divinity School, the School of Forestry & Environmental Studies, and the Department of Religious Studies. With John Grim, she cofounded the Forum on Religion and Ecology. Tucker and Grim also coordinated a ten-conference series titled "World Religions and Ecology" at Harvard's Center for the Study of World Religions. Tucker has been a committee member of the Interfaith Partnership for the Environment at the United Nations Environment Programme (UNEP) since 1986 and is vice president of the American Teilhard Association. Author of many books on religion and ecology, she has recently published *Worldly Wonder: Religions Enter Their Ecological Phase* (Open Court Press, 2003). She is the coeditor of books on ecological views of Buddhism, Confucianism, and Hinduism. She has published *Confucian Spirituality*, coedited with Tu Weiming, and *The Record of Great Doubts: The Philosophy of Ch'i*.

consciousness and values, an expansion of our worldviews and ethics, for the evolutionary life impulse moves us forward from viewing ourselves as isolated individuals and competing nation-states, to realizing our collective presence as a species with a common origin story and shared destiny. The human community now has the capacity to realize our intrinsic unity in the midst of enormous diversity. Most especially, it has the opportunity to see that this unity arises from the dynamics of the evolutionary process itself. For the first time we have a scientific story of the evolution of the universe and Earth that shows us our profound connectedness to this process. We are still discovering the larger meaning of the story.

Our sense of the whole is emerging in a fresh way as we feel ourselves embraced by the evolutionary powers unfolding over time into forms of ever-greater complexity and consciousness. We are realizing too that evolution moves forward with transitions such as the movement from inorganic matter to organic life and from single-celled organisms to plants and animals, transformations that sweep through the evolutionary unfolding of the universe, the Earth, and the human. All such transitions come at times of crisis. They involve tremendous cost, and they result in new forms of creativity. The central reality of our times is that we are in such a transition moment. This is not an easy moment, as human suffering and environmental loss are already widespread. It is not a guaranteed transition, as it will require tremendous human creativity, emotional intelligence, and spiritual strength.

Surrounding this moment is an awakening to a new consciousness that challenges older paradigms of the human as an isolated being in a random, purposeless universe. Peter Raskin called this the Great Transition, while Joanna Macy named it the Great Turning. From valuing hyperindividualism and independence, our consciousness is shifting to embrace interdependence and kinship on a vast scale. The Enlightenment values of life, liberty, and the pursuit of happiness are being reconfigured. Thus life now includes the larger life of the Earth, individual freedom requires responsibility to community, and happiness involves more than material goods. A sense of a larger common good is emerging—the future of the planet and its fragile biosphere.

In this spirit, we are in a transition from an era dominated by

competing nation-states to one that is giving birth to a sustainable multicultural planetary civilization. This birth is occurring within the context of our emerging understanding of the universe story.

Over the past century, science has begun to weave together the story of a historical cosmos that emerged some 13.7 billion years ago. The magnitude of this universe story is beginning to dawn on humans as we awaken to a new realization of the vastness and complexity of this unfolding process.

Just as we begin to understand the vast and complex history of the universe, we are becoming conscious of the multidimensional environmental crisis and of the rapid destruction of species and habitat that is taking place around the planet. Just as we are realizing the vast expanse of time that distinguishes the evolution of the universe over some 13.7 billion years, we are recognizing how late is our arrival in this stupendous process. Just as we are becoming conscious that Earth took more than 4 billion years to bring forth this abundance of life, it is dawning on us how quickly we are foreshortening its future flourishing.

We need, then, to step back, to assimilate our cosmological context. If scientific cosmology gives us an understanding of the origins and unfolding of the universe, philosophical reflection on scientific cosmology gives us a sense of our place in the universe. And if we are so radically affecting the story by extinguishing other life-forms and destroying our own nest, what does this imply about our ethical sensibilities or our sense of the sacred? As science reveals to us the particular intricacy of the web of life, we realize we are unraveling it, although in part unwittingly. Only recently have we become fully conscious of the deleterious consequences of our drive toward economic progress and rapid industrialization.

As we begin to glimpse how deeply embedded we are in complex ecosystems and how dependent on other life-forms, we see we are destroying the very basis of our continuity as a species. As biology demonstrates a fuller picture of the unfolding of diverse species in evolution and the distinctive niche of species in ecosystems, we are questioning our own niche in the evolutionary process. As the size and scale of the environmental crisis is more widely grasped, we are

seeing our own connection to this destruction. We have become a planetary presence that is not always benign.

The simultaneous recognition of our cosmological context and our environmental crisis is clearly demonstrated by two major permanent exhibits at the American Museum of Natural History in New York. One is the Rose Center, which houses the Hall of the Universe and the Hall of Planet Earth. The other exhibit is the Hall of Biodiversity.

The Hall of the Universe is architecturally striking. It is housed in a monumental glass cube, in the center of which is a globe containing the planetarium. Suspended in space around the globe are the planets of our solar system. In a fascinating mingling of inner and outer worlds, our solar system is viewed against the backdrop of garden plazas and street scenes visible through the soaring glass panels of the cube. After first passing through a simulation of the originating fireball, visitors move onto a spiral pathway that descends through time, tracing the 12-billion-year cosmic journey, from the great flaring forth in the fireball, through the formation of galaxies, and finally to the emergence of our solar system and planet. It ends with the evolution of life in the Cenozoic period of the last 65 million years. Under a circle of glass, the breadth of a single human hair represents all of human history. The dramatic effect is stunning, as we are called to reimagine the human in the midst of such unfathomable immensities.

The Hall of Planet Earth continues this evocation of wonder, revealing the remarkable processes of the birth of Earth, the evolution of the supercontinent Pangaea, the formation of the individual continents, and the eventual emergence of life. It demonstrates the intricacy of plate tectonics, a theory that has been accepted for fewer than fifty years, and it displays geothermal life-forms around deep-sea vents discovered only a decade ago. The exhibit illustrates how new our knowledge of the evolution of the Earth is and how much has been discovered within the last century.

In contrast to the vast scope of evolutionary processes evident in the Hall of the Universe and the Hall of Planet Earth, the Hall of Biodiversity displays the extraordinary range of life-forms that the planet has birthed. A panoply of animals, fish, birds, reptiles, and insects engages the visitor. A plaque in the exhibit observes that we

are now living in the midst of a sixth extinction period due to the current massive loss of species. It notes that while the five earlier periods of extinction were caused by a variety of factors, including meteor collisions and climate change, the cause of this present spasm of extinction is, in large part, human activity.

This realization calls into question not only our role as a species, but our ultimate viability. Along with those who recognized the enormity of the explosion of the atomic bombs in Japan, we are the first generations of humans to actually imagine our own destruction as a species. And while this may be extreme, some pessimists suggest this may not be such a regrettable price to pay for the survival of other life-forms.

The exhibition notes, however, that we can stem this tide of loss of species and habitat. The visitor walks through an arresting series of pictures and statistics where current destruction is recorded on one side and restoration processes are highlighted on the other. The contrasting displays suggest that the choice is ours—to become a healing or a deleterious presence on the planet.

These powerful exhibits on cosmic evolution and on species extinction illustrate how science is helping us enter into a macro-phase understanding of the universe and of ourselves as a species among other species on a finite planet. As the Rose Center exhibits demonstrate, the evolution of the universe and the Earth is an unfolding story in which humans participate. Indeed, the introductory video to the Hall of the Universe observes that we are “citizens of the universe,” born out of stardust and the evolution of galaxies, and that we are now responsible for its continuity. Humans can assist in stemming the current extinction spasm, the Hall of Biodiversity suggests—a bold position for an “objective” and “unbiased” science-based museum.

Scientists no longer stand completely apart from what they study. They are helping us witness the ineffable beauty and complexity of life and its emergence over billions of years. They point toward a more integrative understanding of the role of the human in the midst of an extinction spasm. Some of this shift in the museum’s perspective arose in the late 1990s, when the curators were searching for an ornithologist. Of the final six candidates, four studied bird species

that vanished into extinction during the course of their research. This alarmed the museum curators, who realized they could not simply stand by with a disinterested objectivity and witness extinction. The Hall of Biodiversity emerged from this realization.

It can be said, then, that the new moment for science involves three intersecting dimensions: to understand the evolution of the universe and the Earth with the best scientific methods, to integrate the evolutionary narrative as a whole (cosmic, Earth, human), and to reflect on the story with a sense of our responsibility for its continuity. From this emerges a new integration of scientific facts, story, and meaning.

Environmental ethicists and scholars of the world's religions are also called to contribute to this understanding of the universe story. The challenge for religion and ethics is both to reenvision our role as citizens of the universe and to reinvent our niche as members of the Earth community. This requires reexamining such cosmological questions as where we have come from and where we are going. In other words, it necessitates rethinking our role as humans within the larger context of universe evolution, as well as in the closer context of natural processes of life on Earth.

What is humankind in relation to 13.7 billion years of universe history? What is our place in the framework of 4.6 billion years of Earth history? How can we foster the stability and integrity of life processes? These are critical questions underlying the new consciousness of the universe story. This is not simply a dynamic narrative of evolution; it is a transformative cosmological story, which engages human energy for a future that is sustaining and sustainable.

The goal of the universe story, then, is to tell the story of cosmic and Earth evolution by drawing on the latest scientific knowledge in a way that makes it both relevant and moving. What emerges is an intensely poetic story that evokes emotions of awe and excitement, fear and joy, belonging and responsibility.

The universe story is a dramatic one. Throughout billions of years of evolution, triumph and disaster have been only a hair's breadth apart. Violence and creativity are pervasive. The ability of matter to organize and reorganize itself is remarkable—from the formation of the first atoms to the emergence of life. Simple hydrogen has become a vibrant living planet, with beings that now are able to investigate

how this has happened and imagine a life-sustaining future. We are coming to realize that the energy released at the very beginning has finally become capable, in the human, of reflecting on and exploring its own journey of change.

Waking up to our fundamental relationship with the cosmos will be a way to reengage with life. The universe story enables us to connect more deeply with the universe and the Earth of which we are a part. In doing this, we will appreciate the need for a sustainable human presence on the planet.

Thus the integrated story of the origin and development of the universe, of Earth, and of humans could become an inspiring vision for our time. This is because the story gives us a sense of common evolutionary heritage and shared genetic lineage. This new understanding of kinship of humans with each other and with all life could establish the foundations for rediscovering our past and sustaining the future. Carl Anthony, one of the leaders of the environmental justice movement, has said this perspective has been profoundly transforming for his life and work.

We can indeed be inspired by this view of nested interdependence—from galaxies and stars to planets and ecosystems—so that we sense how personally we are woven into the fabric of life. We are part of this ongoing journey. From this perspective, we can see that our current destructive habits toward the environment are unsustainable. In an evolutionary framework the damage we are causing is immense—indeed, cataclysmic. We can thus recognize ecological, economic, and social change as not only necessary but inevitable.

A great transition is indeed upon us. Beyond world wars and the cold war, there beckons the sense of a larger planetary whole—an emerging, multiform, planetary civilization. It is in participating in this transition moment that we will fulfill our role as humans on behalf of future generations. It requires a profound change of consciousness and values—both an expanded worldview of the universe story and a comprehensive global ethics that embraces the Earth community. In this way we will indeed become citizens, not simply of nation-states but of a planet that beckons us with beauty, mystery, and grace.

The Universe is out there, waiting for you to discover it. Share to Facebook. Share to Twitter. Share to LinkedIn. Intelligent aliens, if they exist in the galaxy or the Universe, might be detectable from a variety [+] of signals: electromagnetic, from planet modification, or because they're spacefaring. Although we've come very far in our understanding of stars, planets, and what's out there " in our Milky Way and beyond " we still don't know whether there's any form of extraterrestrial life in the Universe, much less intelligent aliens. And yet, a new study just claimed that there are 36 alien civilizations in the Milky Way, and represent it as a lower limit on what's out there. This is absolutely not a true claim. Here's the science behind it. feature | the common origin and shared destiny of humanity The Universe Story and Planetary Civilization. Mary Evelyn Tucker and Brian Thomas Swimme. As we see our present interconnected global challenges of wide-spread environmental degradation, climate change, crippling poverty, social inequities, and unrestrained militarism, we know that the obstacles to the flourishing of life's ecosystems and to genuine sustainable development are considerable. For the evolutionary life impulse moves us forward from viewing ourselves as isolated individuals and competing nation states to realizing our collective presence as a species with a common origin story and shared destiny. " human community has the A planetary civilization or global civilization is a civilization of Type I on Kardashev scale, with energy consumption levels near that of a contemporary terrestrial civilization with an energy capability equivalent to the solar insolation on Earth (between 10^{16} and 10^{17} watts). In social aspect " the worldwide, global, increasingly interconnected, international, highly technological society.