



A Roaring Force

from One Unknowable Moment

The story of the universe has the power to change history

MARY EVELYN TUCKER IN CONVERSATION
WITH KATHLEEN DEAN MOORE

DRAWINGS BY REBECCA CLARK

THE WORLD HAS ARRIVED at a pivot point in history. You could drive a nail through this decade, and the future of the planet would swing in the balance. What can be done to tip the scales toward a resilient, and flourishing, future? Three things, we're told, all of them essential. First, stop damaging the planet's life-supporting systems. Second, imagine new and better ways to live on Earth. Third, and most important, change the story about who we are, we humans—not the lords of all creation, but lives woven into the complex interdependencies of a beautiful, unfolding planetary system. Many people are pursuing the first two goals. But Mary Evelyn Tucker has taken up the third, making it her life's work.

Mary Evelyn's journey with these ideas began in 1973, when she was a young college graduate teaching at a women's university in Japan. An obvious foreigner, a tall woman with curling red hair, she startled people she passed on the street. What she found in Japan was no less startling. In the gardens, in the red maple leaves and green pines, in the traditions of Shinto, Buddhism, and Confucianism, she discovered an abiding sense of the cosmos and an invitation to be present to "this flower, this season, this time, this moment." It changed her life.

She returned home to study at Fordham and Columbia with

the great scholars of religion, Thomas Berry and Theodore de Bary. In the 1990s, she and her husband, John Grim, convened a series of ten conferences at Harvard and edited a series of ten books for Harvard University Press that explored the connections between the world's religions and ecology. They are now professors in both the Yale School of Forestry and Environmental Studies and the Yale Divinity School, where they direct the Forum on Religion and Ecology. Mary Evelyn's latest endeavor, a collaboration with the cosmologist Brian Swimme, is the Journey of the Universe project, which combines science, religion, and astonishing beauty in the telling of the story of the universe in many different media. I spoke with Mary Evelyn last October to find out more about her remarkable efforts to change the way we humans see ourselves in the world. —K.D.M.

KATHLEEN DEAN MOORE: *What is it about our time that inspires a new story of the universe and our place in it?*

MARY EVELYN TUCKER: Due to the discoveries of modern science, our generation is the first to catch a glimpse of the real dimensions of the universe, the unimaginable immensity of it, its origins, the glory of its unfolding. This glimpse changes everything.

When told in many different ways, for all age groups and cultures, this story has the possibility of giving us a perspective that almost nothing else does. This is a realization that we are part of a living Earth with its complexity and its beauty. This is an awakening to the wholeness of Life, with both its *w* and its *h* forms—both *whole* and *holy*. We don't have language to fully describe this insight. It's thrilling. It's wonder-inducing.

KATHLEEN: *So where does the story start?*

MARY EVELYN: At the beginning there is a "great flaring forth"—a roaring force from one unknowable moment, this origin moment. It lights me up to think that from this emerge the first stars, the first galaxies, the first planetary systems. Any one of these alone would inspire a lifetime of meditation. That single moment gives birth over time to the elements—hydrogen, then oxygen, nitrogen, carbon—all from the explosion of supernovae. From the creative processes of galaxies and stars and finally planetary systems over 10 billion years, our sun, our Earth, our moon emerged, and eventually humans were born. This is staggering, indeed mind-boggling, and we are the first humans to begin to understand this.

It took another billion years for the first cell to emerge, and from that cell came all life on the planet. Did it come from the deep-sea vents? Did it come from an asteroid? All we know is that Earth became ignited with life. So we have multicellular life from the bacteria early on and much later with birds and fish and insects—the tree of life not so much branching as exploding outward. At the same time, Earth began its adventure of conscious self-awareness, from a primitive sentience at the cellular level all the way to our own dreaming, meaning-making, symbol-forming selves.

KATHLEEN: *The story that you tell, this understanding, this perspective, offers people a new worldview, doesn't it? I think of a worldview as a set of beliefs that we swim in, so deeply immersed in its assumptions that we don't often question or even recognize them as assumptions, any more than a fish thinks of water. Worldviews fundamentally shape cultures. Different worldview? Different culture. So cultural transformation often begins when people get a new vision of who they are in the midst of the world. Is that part of what you're hoping the universe story can do?*

MARY EVELYN: Yes. What we are experiencing is a worldview shift of immense import, one where we humans are entering into a fresh understanding that we are part of a developmental universe. If we can see ourselves as coming out of, as birthed from, these dynamic, changing, evolutionary processes—from cosmic beginning to Earth to life to human beings—there will be a huge change of human consciousness and identity. It's certainly as large

as the Copernican Revolution. It's on that order of magnitude.

The Great Chain of Being was the medieval worldview, drawing on earlier Greek thought, which presumed that animals were arranged in an ascending order from small creatures all the way up to humans at the top of the pyramid, and eventually to God. This put humans at the pinnacle of creation—separate from and superior to all other forms of life, closest to God. Of course, Copernicus transformed that paradigm by observing that even if humans were at the center of the Earth, the Earth is not the center of our planetary solar system.

But now we find ourselves in an unimaginable immensity of time and space. We have remarkable new insights from science of how evolution works and how ecosystems flourish within these evolutionary processes. It's not a matter of creation from the outside, where humans are just dropped into the process, as in a Biblical mindset. In the Genesis story, God creates Adam and Eve, and a soul is dropped into these early lifeforms, and all of a sudden we have conscious humans. No!

We humans are part of this vast evolutionary journey. The central new idea is *cosmogogenesis*, namely that evolution is an unfolding process that has continuity from its origin moment to the present, an interlinking of the stars and elements and supernovae with all lifeforms, and carbon and me here in New England and you in the Oregon forest. It's a unity of life from the first cell to all future forms of life. This dynamic and complexifying process is what we are trying to understand.

We are related to the stars and the first cells and the small mammals that survived the asteroid impact that wiped out the dinosaurs. We are related to the apes and baboons and orangutans—how thrilling is this journey that we have made! What science is giving us is a glimpse of how something more complex arises from something less complex.

How does this happen? We don't fully know, but it has to do with self-organizing dynamics and emergent properties. What's a whirlpool? What are these patterns of a spiral galaxy? What can generate this form? We're finding ways to talk about how systems organize themselves, how change happens over time.

KATHLEEN: *What does this story tell us about what it means to be human?*

MARY EVELYN: The stars stun us with their beauty, drawing us into wonder. And this sense of wonder is one of our most valuable guides on this journey into our future as full human beings. The creativity of evolutionary processes and self-organizing dynamics are mirrored in our own creativity, which is birthed from these processes of billions of years. Thus, our creativity is enlivened by being in resonance with a life-generating planet—the flowers, the leaves, the waving grasses, the sunsets, the wind.

Humans desire, more than anything else, to be creative, and we desire to participate in the creative processes, in the future and in life—that's what having children is about. But we can be life-generating in a variety of ways—creative, participatory, oriented toward something larger than ourselves. What is larger than ourselves that we really care about? It's Life, as far as I can see.

We are on the verge of knowing how to express comprehensive gratitude, acknowledging that we are dwelling within a living system. This gives rise to a sense of resonance with lifeforms that certainly earlier peoples understood, and native peoples still do. This is a new moment for our awakening to the beauty of life that is now in our hands. And because we are life-giving humans and care about our children and their children and future generations of all species, I think the universe story can sustain us and inspire us in so many ways yet to be fully discovered.

KATHLEEN: *What does the story inspire us to do? What is our work, as part of the unfolding universe?*

MARY EVELYN: We are in an extinction spasm currently. We are shutting down the Cenozoic Era, which began with the elimination of the dinosaurs 65 million years ago. Our great challenge is to imagine how a new era of Earth's history can emerge. Our work in the world is not just a stopgap to extinction or a stopgap for pollution or fracking or whatever it might be. We are part of the Great Work of laying the foundations of a new cultural and biological era, what Thomas Berry called the Ecozoic Era.

Our work is to align ourselves with evolutionary processes, instead of standing in their way or derailing them. So our human role is to deepen our consciousness in resonance with the 14-billion-year creative event in which we find ourselves. Our challenge is to construct livable cities and to cultivate healthy foods in ways that are congruent with Earth's patterns. That is what biodynamics and permaculture and organic farming are trying to discover: How do soils work? How does bacteria work? How do nutrients work? We need to broaden our ecological understandings, so we can align ourselves with the creative forces of the universe.



We can talk about this in every ecosystem, whether it's oceans and fisheries, rivers and estuaries, meadows and forests. We have scientific and ecological knowledge about how these ecosystems are working. We need to use that knowledge to support, restore, and renew these ecosystems.

KATHLEEN: *What thrills me about this moment is that the physical scientists, the ecologists, the ethicists, the indigenous traditions, the ancient Asian religions are all telling a story of dynamic emerging systems, a story of interconnections, of which humans are very much a part. I wonder if this convergence of truths from so many different ways of knowing will turn out to be the real excitement of our time.*



evolution need to be integrated with values and with an exploration of who we are as humans. This is the work of humanists—historians, writers, philosophers, artists, and poets

At the same time, I think there's a hunger in the world's religions, in their move into modernity, to transform themselves, to shed some of their more fossilized and rigid ways of being in the world. They want to participate in the story of life, the story of generativity. So we have religion and history and philosophy and the narrative and imaginative arts giving us an integrated sense of our planetary presence. All of these disciplines are on the verge of a profound intersection with the sciences in their plurality. Integrated ways of knowing will bring us forward toward solutions that are grounded in evolutionary time, in story and metaphor, and in valuing ourselves and ecosystems and species, which is crucial.

KATHLEEN: *Over the last decades, your life work has been to bring the world religions into dialogue with ecological issues. You've edited books and convened conferences and traveled the world toward that end. But maybe the most exciting thing you've done is to make a major film, Journey of the Universe, which won an Emmy Award and was broadcast nationwide on PBS. And not just a film—a triumphant work of art that uses original music, powerful storytelling, and spectacular images to bring audiences face to face with the magnificence*

of the story in which they are participating. What made you choose to make a film?

MARY EVELYN: The combination of images, music, and words has immense potential for transformation. That's why films are such a vibrant art form right now and of course have been for a long time in the environmental movement. We felt that through a film we could suggest that we will be new creatures, awakening to a fresh awareness of who we are. If we take this story in, and its implications for situating ourselves in deep time, we will grow in consciousness and connection. So the film is about images, art, big-screen, big-picture, but also about empowering the human with the possibility of transformation. We

MARY EVELYN: We're trying to give birth to an integrated worldview for humans at this most critical moment in the 150,000-year history of being human. Political action is absolutely necessary, but, like everything, insufficient, unless we bring in the long-term worldview. We're trying to midwife a change in worldview and principles—moral grounding, to use your language—that will sustain us over time.

The universe story can help us revalue multiple ways of knowing. The gifts of science are immense—with research, modeling, and testing we are coming to understand this great spine of evolution. But this needs to be fleshed out: What can other ways of knowing bring to that understanding? The facts of

can do something. We can contribute to the flourishing of the Earth community. That may be one of the most important points of the film.

But the Journey project actually has three parts. First, a film that engages people in a big, visual way. Second, a book that integrates science and the humanities in a literary way so we can experience the metaphors of connectivity. Third, a series of twenty videotaped conversations. One set of conversations with scientists is meant to deepen our knowledge of the universe story by having astronomers, geologists, and biologists tell their part of the narrative. The other set shares inspiring, on-the-ground stories of environmentalists, those involved in eco-cities, eco-economics, and eco-justice, as well as stories about educating children and raising healthy food.

We need to be asking so many questions: What kind of sustainable cities do we need to build? What are just economic systems for people and the planet? How do we keep our rivers and air free of harmful pollution? How do we plow fields in ways that don't cause the erosion of soils? It's as simple as creating the conditions for pure air, clean water, and healthy soils. How do these elements of air, water, and earth ground us, so that we are aligning ourselves with the processes of evolution?

KATHLEEN: *The United Nations has issued yet another report, saying that the world is not moving nearly fast enough to prevent major disruptions of food supplies, inundation of coastal cities, massive movements of refugees, widespread extinctions. Yet your work seems to be based on a beautiful hope. What do you hope for? What do you expect? Do you think humankind will make the turning toward this creative participation in an unfolding universe?*

MARY EVELYN: It's a really important question, indeed a haunting one. We all share the sadness of our times, the despair we can feel around us, and the struggles of individuals and institutions. So I think we have to acknowledge that these are extremely difficult times—that we are being drenched with dispiriting news of all sorts: terrorism, Ebola, war, refugee camps, and the destruction of species and ecosystems. Truly horrific news, there's no question about it. What is our resilience in the face of this?

It is in the nature of the universe to move forward between great tensions, between dynamic opposing forces. As Thomas Berry said in his article "The New Story," if the creative energies in the heart of the universe succeeded so brilliantly in the past, we have reason to hope that such creativity will inspire us and guide

us into the future. My greatest hope would be that these life systems are so powerful, are themselves so resilient, that we can take inspiration from the natural world and its fantastic, intriguing mystery and complexity. In this way, our own generativity can become woven into the vibrant communities that constitute the vast symphony of the universe.

There are hundreds of thousands of people on the planet who are aware and ready and already participating in this epic story. They want to help write the story into its future, participate in its unfolding, so that we get through this hourglass of loss and extinction, of sorrow and mourning. We need to articulate this sorrow and ritualize our grieving; the humanities can help us do that. But we need to create, in this hugely difficult birth passage, new ways of being vibrant and mutually enhancing creatures on this planet. 🌿

For more information about the Journey of the Universe project, including teaching materials, go to www.journeyoftheuniverse.org.

Sandbar, Early June, Kansas River

Something in the water smells like a dead zone. Something
in the mud creeps across my heel.

You can drift out here. The silt, the silt. Every dust bowl longs
to be soup. I mean the sky

is totally Sanskrit,
and flycatcher's still working that little willow's atmosphere

like he owns the place, like
even the cottonwoods have quit giving the wind

some lip. I love near-island's bluffsheer, that loaf of loess look.
Go on, Mama Kaw,

dredge me. Silver maple, show me some leg.
There's an eagle now. Of course there's a fucking eagle. I mean

upwellings so perverse
one longs to strike a match. And vultures, just upstream, steady

at conjugating carp into kite frame. God,
you old trotliner, I'm going to clean all your hooks

and then make a necklace, lots of necklaces, from what cordage,
what sinkers. For nowhere, its throat.

—Thorpe Moeckel