

# *Lisa Sideris's Consecrating Science*

with Holmes Rolston, III, "Lame Science? Blind Religion?"; Sarah E. Fredericks, "Reacting to Consecrating Science: What Might Amateurs Do?"; Donovan O. Schaefer, "Mere Science: Mapping the Land Bridge between Emotion, Politics, and Ethics"; Courtney O'Dell-Chaib, "The Shape of This Wonder? Consecrated Science and New Cosmology Affects"; Colin McGuigan, "Wonder Opens the Heart: Pope Francis and Lisa Sideris on Nature, Encounter, and Wonder"; Mary Evelyn Tucker, "Journey of the Universe: Weaving Science with the Humanities"; and Lisa H. Sideris, "Wonder Sustained: A Reply to Critics."

## JOURNEY OF THE UNIVERSE: WEAVING SCIENCE WITH THE HUMANITIES

by Mary Evelyn Tucker

*Abstract.* This article discusses *Journey of the Universe* as a project that consists of a film, book, conversation series, online classes, and a website. It describes how the creators worked to integrate science and humanities, not privilege or elevate science. It refutes arguments made in Lisa Sideris's *Consecrating Science: Wonder, Knowledge, and the Natural World* that suggest that *Journey* overlooks religion and distorts wonder. The article observes that *Journey* does not dismiss religion but includes it in explicit ways. It does not dictate wonder; it evokes wonder. In short, *Journey* is a living or functional cosmology with implications for mutually enhancing human–Earth relations.

*Keywords:* anthropocosmic worldview; Thomas Berry; Forum on Religion and Ecology; history of religions; *Journey of the Universe*; living or functional cosmology; new story; science and humanities; self-organizing dynamics; Brian Thomas Swimme; technology; Pierre Teilhard de Chardin; *The Universe Story*; wonder

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In this article, I will be responding to Lisa Sideris's *Consecrating Science: Wonder, Knowledge, and the Natural World* (2017), especially the points the author makes in the Introduction and in Chapter 9: "Anthropic and Anthropocene Narratives of the New Cosmology." This includes comments on Pierre Teilhard de Chardin, Thomas Berry, Brian Thomas Swimme, John Grim, and *Journey of the Universe*, which Swimme and I authored.

Mary Evelyn Tucker is Codirector, Forum on Religion and Ecology at Yale University, and a Senior Lecturer and Senior Research Scholar in Religion and Ecology at the Yale School of Forestry and Environmental Studies, Yale Divinity School and Department of Religious Studies, Yale University, New Haven, CT, USA; e-mail: maryevelyn.tucker@yale.edu.

Sideris's book as a whole raises many significant points, some of which have real merit and some of which raise more questions. One of the values of the book, for example, is Sideris's difficulties with reductionistic science or with privileging science, which all of those named above would share.

However, Sideris makes several other assumptions which are incorrect, namely, that those discussed in the book are "a fairly like-minded group" (2017, 4); that they share a consecrated view of science; and that they all have a dim view of religion (2, 11). She also claims that they are working on similar goals, namely that they are "inspired by and contributing to a common vision and project of narrating the cosmos" (4). These broad assumptions overlook significant differences among those discussed.

#### WHAT *JOURNEY OF THE UNIVERSE* IS AND IS NOT

There are certainly many ways to create misunderstandings or distortions of a project. *Consecrating Science* does this with *Journey of the Universe*, a multimedia project that is not easily placed in a few categories for simple critique. It consists of an Emmy award-winning film shown on PBS for three years with several million viewers; a book from Yale University Press that has sold over 26,000 copies and been translated into seven languages; a series of twenty conversations with scientists, historians, and environmentalists; three massive open online courses (MOOCs), in which 24,000 people have enrolled; and a comprehensive website. This was a ten-year project in creating and eight years in distributing. Its traction is demonstrable in the many favorable endorsements the book has received (<https://www.journeyoftheuniverse.org/book-testimonials>) as well as the film (<https://www.journeyoftheuniverse.org/critics-of-film>). In addition, there has been widespread positive response to the online classes.

Our students at the Yale School of Forestry and Environmental Studies have often indicated how *Journey of the Universe* has reignited their commitment to environmental work and given them hope, despite the many challenges ahead. The Sierra Club has distributed the *Journey of the Universe* book to their board of directors and key leadership group to explore nurturing resilience for environmental work among their 3.5 million members. How then could this project be depicted by Sideris as simply a story that consecrates science and therefore does not inspire wonder or transformative engagement of care for the environment? A "failure," as she dismisses it (2017, 129). Hardly!

To begin to illustrate the limitations of some of Sideris's assumptions and therefore the inaccuracy of some of her conclusions, I will indicate broadly what *Journey of the Universe* is and what it is not. *Journey* is a telling of the universe story in book and film form so as to awaken a concern for the flourishing of the Earth community. It is one telling, not the only one, and there will be many other narrations in the future.

The intent of *Journey* is to respect the diverse creation stories in the world's religions (Tucker and Grim 2016) and be in dialogue with them. (See *Journey* Conversation 15 with David Begay and Nancy Maryboy at <https://www.journeyoftheuniverse.org/conversations>.)

*Journey* is not a project that singularly values science; it is an integration of science and humanities. It is not based on mechanistic science; it draws on quantum theory, systems science, ecological science, emergence theory, and self-organizing dynamics. It does not present a materialist cosmology, but rather a living cosmology with implications for mutually enhancing human–Earth relations. It does not dismiss religion, but includes it in explicit ways. It does not dictate wonder; it evokes wonder. It does not elevate technology as salvific in itself; it values alternative technologies for energy, health, education, transportation, and so on. It does not prize an anthropocentric worldview; rather it embraces an anthropocosmic worldview that situates the human in a cosmological context. It values such an inclusive worldview, based in many of the world's religions, as well as evolutionary and ecological theories, that sees the human as arising from cosmic and Earth processes. From this perspective, it encourages our contributions to the flourishing of life, both planetary and regional, human, and more than human. Let us develop these points further.

*Journey of the Universe Is Not a Project that Singularly Values Science; It Is an Integration of Science and Humanities*

Sideris asserts that “These critics typically portray the humanities as vacuous, obscurantist, and irrelevant” (2017, 12). No, many people involved in creating the *Journey of the Universe* project are humanists and scholars of religion.

*Journey of the Universe* is a multimedia, multidisciplinary project some four decades in the making. It is in the lineage of Thomas Berry's call for a “New Story” that appeared in his article in 1978. Ten years later, “The New Story” was included in Berry's widely read book, *The Dream of the Earth* ([1988] 2015). In this article, Berry noted the power of story to motivate and inspire. He called for an engaging story of evolution that would help people feel connected to a larger whole and thus participate in mutually enhancing human–Earth relations. He wrote: “Within this context the scientific community and the religious community have a common basis . . . and a new, more integral language of being and value can emerge” (Berry [1988] 2015, 136).

Berry was a historian of world religions who created a signature program in the History of Religions at Fordham University (Tucker et al. 2019). He taught broadly in the world's religions, directed twenty-five doctoral dissertations, and published books on Buddhism, religions of India, and articles on Confucianism (all of which are still in print). He was not by

training, study, or disposition one to uphold science as superior to history, religion, philosophy, and art. His library of over ten thousand books at the Riverdale Center of Religious Research indicated how widely he read across the humanities. His teaching, writing, and speaking over seven decades demonstrated how genuine were his efforts to bring the sciences and humanities together. A few Berry quotes that recognize science as an important basis for telling a “new story” do not change a lifetime of commitment to the humanities and to multiple ways of knowing. He hoped to create an integrated narrative of religion and science that would give humans a context for mutually enhancing human–Earth relations.

The first book to do this was *The Universe Story*, published by Brian Thomas Swimme and Berry in 1992. The first film to do this is *Journey of the Universe*, released nearly twenty years later and dedicated to Berry. Each of these projects took ten years to complete because of the painstaking efforts of the authors to involve scholars from many disciplines. *The Universe Story* was read in manuscript form by both scientists and humanists. Before it was published, a conference was held in January 1990 to gather responses of people from many disciplines and perspectives.

In a similar manner, Swimme and I wrote the *Journey* film script and book. We brought together our specialties in an effort to create a new fusion of science and humanities. Swimme’s PhD is in mathematical cosmology, while mine is in world religions, particularly the Asian traditions. His lineage from First Nations Salish peoples of British Columbia is evident in valuing cosmological stories as informing ecological lifeways and praxis. We have spent our careers in interdisciplinary settings and have worked across disciplines for decades. One of our motives was to tell an engaging story that would encourage people in responding to the growing environmental crisis. Our efforts across a decade are not accurately described by Sideris: “The new cosmologists are not sufficiently aware of (or sufficiently forthcoming about) the extent to which their narrative, and its forms of wonder, are manufactured from appealing pieces of a sprawling and diverse ‘body’ of scientific knowledge” (2017, 7). Our work is more in the spirit of Robin Wall Kimmerer’s book, *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teaching of Plants* (2013).

Thus, to ensure a genuine and sustained dialogue between scientists and humanists we organized several week-long summer workshops at the Whidbey Institute near Seattle to discuss the *Journey* project. This helped clarify the key scientific and humanities ideas that might be woven for consideration by a broad audience. The scientists who were engaged in this process saw the *Journey* project as having great potential to awaken wonder and thus encourage a sense of care for Earth’s ecosystems and biodiversity. The humanists from philosophy, literature, history, and the history of religions understood that this was not simply a scientific narrative. Poetry,

metaphor, and symbols were woven into the book and film so as to inspire engagement with environmental and social challenges. And both book and film have done exactly that.

The film was completed in 2011 and premiered at a conference in March at the Yale School of Forestry and Environmental Studies. This conference brought together scientists and humanists from across Yale University and beyond to reflect on the cosmological and ecological implications of *Journey*. Since that time, the film has been viewed in film festivals, museums, and universities, as well as religious and community organizations. In addition, the film was broadcast for three years on 77 percent of the PBS stations across the United States. There will be many other narrations of this story as our perspectives—shaped by religion, culture, race, gender, and class—are so varied around the planet. Yet, the widespread appeal of *Journey* is already evident, in part because it is an invitation into wonder, transformation, and resilience.

To distort the role of science in *Journey* or in the thought of Thomas Berry is a disservice to both. To be specific, Sideris attributes a quote about science to Berry in *The Dream of the Earth*, but it is not there (2017, 138, note 152). In the next six quotes, she mistakenly attributes lines to Berry that are actually in *Journey*, and she takes the sentences out of context (138–39, notes 153–158). For example, she quotes: “From its inception,” they [Swimme and Tucker] assure us, “modern science was committed to discovering knowledge and using it to make a better world” (138). Sideris implies that we are affirming this perspective of a better world through science, but this sentence was intended ironically, as can be clearly seen in the next few lines: “Why, then, with all of this scientific knowledge and technical skill, have we caused such extensive damage to Earth’s ecosystems? For the most part, this destruction is carried out without any deep awareness that life required literally billions of years to bring forth such complexity period. What is it about our modern consciousness that enables us to avoid seeing the disastrous results of our way of life?” (Swimme and Tucker 2011, 103). This is hardly “an unduly sanguine appraisal of the benign intentions of *all* of modern science and technology” as Sideris asserts (2017, 138).

*Journey of the Universe Is Not Based on Reductionist or Mechanistic Science; It Draws on Quantum Theory, Systems Science, Ecological Sciences, Emergence Theory, and Self-Organizing Dynamics*

Sideris writes: “I do not take science to be a monolithic activity or a seamless and bounded entity independent of other human activities” (2017, 6). Nor do those of us who participated in the *Journey* project.

Despite this claim, Sideris’s book gives little attention to the various kinds of relational sciences that are now present across the scientific

disciplines, from astronomy and geology to molecular biology and particle physics. Instead, science is repeatedly dismissed as reductionistic, which is considered a major problem for Sideris, indeed unacceptable. Moreover, in one form or other, anyone who subscribes to new cosmology is suspect. All of the figures in the book are virtually placed under this large umbrella of reductionism and privileging science and then summarily dismissed. Nuances of ideas and associations are largely ignored by Sideris. Even our interactions at various conferences with other scientists mentioned in the book are misconstrued as accepting all of their ideas. This is not only inaccurate, it is distorting of genuine differences regarding the status and role of science. Sideris has indeed advocated for not having dialogue with those with whom we may disagree.

Those of us involved in creating the *Journey* project (Swimme, John Grim, and myself) view science as one way of knowing among others. We are not consecrating science or ceding absolute authority to it. Indeed, we have observed that when the empirical method of science becomes an objectifying worldview, the livingness of Earth may be ignored. This is why Berry frequently said, “The universe is not a collection of objects, but a communion of subjects.” It is puzzling in this regard that Berry’s final book of essays, *The Sacred Universe* (2009), is not mentioned. This book title and these essays would indicate how broad and inclusive were his views of the sacred and how far beyond reductionist or materialist science he went.

It should be quite clear that *Journey of the Universe* does not subscribe to materialist science, as Sideris would also recognize. Nor does *Journey* present evolution as simply composed of mechanistic processes. Rather, it recognizes that evolution is governed by natural laws discoverable by scientific methods and empirical observation. Quantum theory is giving us a glimpse of the arising and bonding of atoms at the atomic level. Systems science is providing a more robust understanding of interconnection, and ecological sciences are revealing new forms of interdependence. The science of emergence is offering a fuller explanation of how things evolve from lesser to great complexity.

Similarly, the self-organizing dynamics of evolutionary processes are part of the remarkable creativity of evolution, which humans are discovering. While humans are gifted with the creativity of symbolic consciousness, we know that different kinds of self-organizing creativity abound in the universe and Earth—the formation of galaxies and stars, the movement of tectonic plates, the chemistry of cells, the biological complexity of photosynthesis, and the migrating patterns of birds, fish, turtles, and caribou. Such creativity is to be valued and celebrated in the arts as, for example, in Sam Guarnaccia’s *Emergent Universe Oratorio* inspired by Teilhard de Chardin, Berry, and *Journey of the Universe*.

*Journey of the Universe Does Not Dismiss Religion, but Includes It in Specific Ways*

Sideris claims: “the new cosmologists set out to create a ‘new story’ to supersede the flawed anthropocentric, dominionistic, controlling attitudes they believe to characterize the traditional faiths” (2017, 2). She continues: “I find troubling the hubristic, quasi-authoritarian, and intolerant attitudes that are sometimes expressed or encouraged by exponents of the new cosmology toward the nonexpert, the nonscientist, and members of the faith communities generally” (3). She asserts: “Religions, and their contingent narratives, are thus easily displaced by science’s ‘real world’ credentials” (11).

These statements simply do not apply to the *Journey of the Universe* project or to Thomas Berry. In contrast to some others mentioned in Sideris’ book, the authors of *Journey* take seriously world religions, spirituality, and ethics. Many historians of religion and theologians were involved in *Journey* and clearly value these perspectives. Indeed, John Grim and I spent a decade studying these traditions in graduate school, as well as traveling across Asia to religious sites, and visiting with the Crow tribe in Montana and the Salish peoples in Washington State for twenty years.

We then spent another decade organizing ten conferences and publishing ten books at Harvard’s Center for the Study of World Religions. This focused on the ecological dimensions of the world’s religions, mapping their views of nature and their environmental ethics and practices. These conferences involved some eight hundred scholars of religion (along with scientists) over a period of three years from 1996 to 1998. The volumes have been translated into various languages and have provided a basis for further research of many scholars, leading to a new field of study in religion and ecology.

We also devoted twenty years to creating with many others the Forum on Religion and Ecology now at Yale University. This consists of a comprehensive website featuring news articles, conferences and books, annotated bibliographies of the ecological dimensions of the world’s religions, and an e-mail newsletter reaching some 12,000 people around the world. The fact that this work is barely mentioned in Sideris’s book is not only troubling; it contributes to further distortion as she repeatedly suggests that we are consecrating science and devaluing religion. Nothing could be further from the truth.

Rather, images and metaphors from the wisdom traditions of the world religions and philosophies are woven into *Journey of the Universe*. In fact, there are numerous affinities between the world’s religions and *Journey*, some of which are described in the talks that were delivered at the Chautauqua Institution conference on “Our Elegant Universe: *Journey*

of the Universe and the World's Religions" in June 2013. Similarly, a conference at Yale in November 2014 drew over four hundred people to explore the topic of "Living Cosmology: Christian Responses to *Journey of the Universe*," which was subsequently published as a book (Tucker and Grim 2016).

The extensive work of the Forum on Religion and Ecology at Yale is thus a complement to *Journey of the Universe* as both of these projects are concerned with our growing ecological crises. As such, they are trying to awaken humans to recognize our dependence on nature's remarkable fecundity and complexity. The work of the Forum aims to assist in identifying environmental values and ethics that are culturally diverse in the world's religions, while *Journey of the Universe* provides a deep time evolutionary basis for seeing our embeddedness in nature and envisioning how we might mitigate the deleterious unraveling of life systems.

Despite the problems of religion, which are widely acknowledged by Forum participants, a new field of religion and ecology has emerged in academia and a new force for change has arisen in communities around the world (see "Engaged Projects" on the Forum on Religion and Ecology website). In this spirit, our book *Ecology and Religion* (Grim and Tucker 2014) illustrates how religious cosmologies and religious ecologies have woven humans into nature and the cosmos both historically and at present. Neither this book, nor the ten edited Harvard volumes on world religions and ecology, nor our *Daedalus* volume (Tucker and Grim 2001), nor the *Routledge Handbook of Religion and Ecology* (Jenkins et al. 2016) are discussed in Sideris's book. This collaborative interdisciplinary work in religion and ecology was done in conjunction with hundreds of people, academic and nonacademics alike. Ignoring or dismissing such a large body of research, writing, scholarship, and engagement that was critical in creating *Journey of the Universe* is surprising at best.

To be clear, particular religious traditions are not explicitly named in *Journey* because this project is meant to appeal across all denominations. Moreover, PBS would not have welcomed the film for broadcasting if we had not created this broad inclusive context. Nonetheless, religious cosmologies and religious ecologies are woven into the fabric of *Journey*. Indigenous notions of kinship with all species and Buddhist understandings of interdependence are embedded in the film and book. Jewish and Christian ideas of stewardship of nature and Islamic notions of trusteeship are themes in *Journey*. Moreover, in considering humans as "the mind-and-heart of Heaven and Earth," we are drawing on one of the most ancient ideas and images in Chinese thought. This idea, present in both Daoism and Confucianism, sees the human as that being who completes the cosmos, revealing an "anthropocosmic" worldview, not an anthropocentric worldview. Every time we show the film in China, the audiences are moved



to see their worldview represented. This is why the film, the book, and the MOOCs have been translated into Chinese.

*Journey of the Universe Does Not Present a Materialist Cosmology, but Rather a Living Cosmology with Implications for Mutually Enhancing Human-Earth Relations*

*Journey of the Universe* is a cosmology, although not just in the scientific sense of the study of the early universe. Rather, it is a living cosmology in the sense of being an integrated story that explains the dynamic unfolding of the cosmos Earth, and life. All cultures have had such stories that have inspired both principles and practices for creating coherent and just societies. We have indicated above that environmental values are present in the world's religions and are often tied to their cosmologies (Grim and Tucker 2014).

A living cosmology, then, implies that we are part of complex Earth systems and depend on them and interact with them. This perspective provides what Berry termed a functional cosmology, one that activates people's participation in environmental and social change. The *Journey of the Universe Conversations* are a series of twenty interviews with scientists, historians, and environmentalists that demonstrates this. The *Conversations* extend the implications of the *Journey* film and book for encouraging ecological awareness and engagement. When Sideris frequently insinuates that there is no traction for *Journey* with consequential change in the world, or that it does not actually contribute to environmental solutions, she is neglecting to reference the *Journey Conversations* on topics such as renewable energy, permaculture, eco-cities, ecological economics, environmental education, and the constructive role of *Journey* to overcome divisions of race, suggested by our African American colleagues Carl Anthony and Belvie Rooks. The accusation that *Journey* "glosses over social justice issues" (Sideris 2017, 136) is simply not appropriate. Nor has Sideris considered the Engaged Legacy Projects of Thomas Berry, which record some of the ecological projects and learning centers across the United States, Canada, England, Ireland, and Australia (<http://thomasberry.org/life-and-thought/engaged-legacy-projects>).

Many of those doing this work and those interviewed in the *Conversations* note that they are inspired by Berry and by the comprehensive perspective of *The Universe Story* and *Journey of the Universe*, as well as by their affinity with nature. In this spirit, *Journey of the Universe* is more than a beautiful story. It is a functional and engaged cosmology because it harnesses the energy of awe and wonder for the multiple efforts of humans to contribute to the flourishing of the Earth community. This is what Berry called the Great Work, in which humans may become a mutually enhancing presence for Earth's systems and societies (Berry 1999).

To participate in this transformative work, we are not suggesting that it is necessary to be informed by *Journey of the Universe*. We are, however, noting that numerous people are moved to action by seeing themselves as part of a larger whole, namely a vast, evolving universe. Indeed, some environmentalists, such as the Australian rain forest activist John Seed, have been reinvigorated because of the perspectives found in *The Universe Story*.

Sideris maintains: “We cannot have, and should not seek, a grand narrative. . . . The universe is not the scale on which we can meaningfully connect and interact with our worlds” (2017, 8). Simply because Sideris prefers small stories (199–200), does not take away the fact that many others, such as John Seed, are moved by the large story of a 14-billion-year unfolding universe–Earth process. The *Cosmos* series with Carl Sagan, released in 1980, demonstrated this. It was the most watched television show at that time, involving millions of viewers, and it remains the most viewed PBS series worldwide. *Journey of the Universe* similarly received several million viewers when it was shown on PBS for three years. Clearly, people are drawn to big stories as well as smaller stories. It is not credible to claim otherwise. Indeed, indigenous peoples around the world have cosmological stories to describe the universe and Earth that interface with local stories of geological formations. For millennia, these cosmovisions have informed their worldviews and ethics and shaped their identity as a people in a particular place. This is true in most of the world religions as well, for example, the *Mahapurusha* (Great Person) cosmology in Hinduism and the *Amaterasu Omikami* (Sun Goddess) cosmology in Shinto.

Sideris adds, “In other ways, too, the new cosmology may foster dislocation and disconnection from nature” (2017, 12). This is simply not the case, as is demonstrated in the influence Berry has had on nature-based education. Many Montessori teachers, who are profoundly nature-based in their curriculum, draw on the universe story and *Journey* perspective. They rely on Maria Montessori’s writings, as well as books by Jennifer Morgan (2002, 2003, 2006), who learned from Berry. Both Berry and Swimme have spoken at Montessori teacher conferences and encouraged nature-based education as a way to tell the story. Berry was also a major source of inspiration to Richard Louv in his path-breaking environmental education for children (2005). This is because, as Louv often stated, Berry’s writings reflect his affective sensory experience of the natural world. Moreover, in North Carolina a 20-year project for children’s education in nature, the Center for Education, Imagination and the Natural World, recognizes Berry’s “New Story” and his encouragement of place-based education as inspirations for their work. Dislocation or disconnection from nature was the opposite of his life work, as it is ours.

Journey of the Universe *Does Not Dictate Wonder; It Evokes Wonder*

Sideris believes that there is “appropriate wonder and inappropriate wonder” (2017, 3). She also claims that “[t]hese narratives suggest that the natural world as humans normally encounter it—without the aid of sophisticated instruments or facility with the latest scientific experts—is neither fully real nor especially valuable. Wonder becomes the bailiwick of the expert” (12).

For Sideris to say that wonder can only be understood in one way creates an orthodox position. All other perspectives are then considered heterodox, namely, inappropriate. This tends to dictate how wonder is interpreted rather than opening it up to various perspectives and possibilities. To claim that science-based wonder is inappropriate and sensory-based wonder is appropriate creates a false dichotomy.

Moreover, her assertion that “[w]onder is not true wonder that takes the human as its object” (2) makes for an odd disconnect with science and humanities, medicine, and the arts. This certainly eliminates the awe that many paleontologists sense in their work uncovering the fossil record of human evolution. Surely those in the humanities—in history, philosophy, religion, literature, and art—have celebrated the human with a sense of wonder and amazement as well as dread. Greek philosophy and drama, Shakespeare and Milton, Michelangelo and Leonardo da Vinci come to mind, along with numerous examples from Asian and indigenous cultures.

On the religion side, to overlook what religions contribute to cultivating wonder is peculiar at best. *Worldly Wonder: Religions Enter Their Ecological Phase* (Tucker 2003), not referenced by Sideris, is a book that illustrates how religions awaken awe and reverence in the presence of nature and the cosmos. In the tradition of Rudolf Otto’s *Idea of the Holy*, it suggests that the “numinous” experience in nature is widespread and is open to all—scientists and religionists. Religions have celebrated wonder and mystery throughout their long histories, as is abundantly clear in rituals celebrating the seasons and marking the diurnal cycles of light and darkness. Religions have evoked such wonder through sacred liturgy, art, and music as well. In our travels, we have witnessed ceremonies in many religious contexts throughout the world that give rise to wonder and awe. Does Sideris have a singular view of wonder that somehow omits these examples from the religions around the planet?

Furthermore, can we believe this accusation against all those named in this book? Sideris claims “the wonder they celebrate is largely complicit with the forces that have created our crisis-ridden, human-dominated planet. Indeed, the wonder enshrined in these movements is a likely *driver* of these crises” (2017, 2). Really? Those mentioned in the book are repeatedly accused of having more hubris than humility because their sense of wonder is misplaced and their valuing of humans is overstated. How so? Could

it not be that the thousands of people who have appreciated *Journey* and expressed this in the MOOCs have awakened to a wonder that is both cosmic and Earthly, valuing the long journey out of which all species arose, including humans at a very late stage? In this context, such an understanding of deep time does not lead to humans seeing themselves as a dominating species, as Sideris asserts. Quite the contrary.

Rachel Carson seems to be the primary standard for wonder for Sideris. Yet, as much as we all admire her, is not this a bit confining? Numerous visits with students in our classes to her papers in the Beinecke library at Yale have only increased my respect for her. But these visits also make me aware of Carson's openness to many ways of knowing and being in the world that might be different from hers. Those of us involved in the *Journey* project share a deep appreciation of her elevation of wonder in response to nature's mysteries and her skepticism regarding the overreaching claims of scientific knowledge.

Yet, she would be the first to say that wonder cannot be dictated or circumscribed; it can only be evoked and widened. And this evocation is in the presence of mystery and the unknown, which is also part of *Journey of the Universe*. As we suggest at the end of the film and book, "Wonder will guide us." But we do not predetermine how that should be interpreted or understood within a particular framework or discipline. Wonder can be evoked by science, art, literature, religion, philosophy, and much more. It is both sensory-based and ecologically based. It is both cosmic and Earth-based. We are inspired by stars and galaxies as well as mountains and seas, as was Carson. Indeed, she said "The more clearly we can focus our attention on the wonders and realities of the universe about us, the less taste we shall have for destruction" (2011, 163). She also wrote, "In every outthrust headland, in every curving beach, in every grain of sand there is the story of the Earth" (2011, 114). Nature as an expression of Earth's story is celebrated in *Journey*, as one can see, in the many images of our planet and its teeming life forms. The encouragement of the direct experience of nature is far from absent in the whole *Journey* project and was a continual theme in Berry's talks and writing ([1988] 2015, 2009; Swimme and Berry 1992).

*Journey of the Universe Does Not Elevate Technology as Salvific in Itself;  
It Is Something that Values Alternative Technologies for Energy, Health,  
Education, Transportation, etc.*

Sideris is worried about the influence of Teilhard de Chardin and his views of technology on the *Journey* project. But her bibliography cites only one of Teilhard's several dozen books and that one has been surpassed by an elegant translation of *The Human Phenomenon*, which is not cited (1999). Where are references to *Hymn of the Universe* or *The Divine Milieu*, both of which

celebrate the wonder and beauty of the universe and Earth? As these books demonstrate, Teilhard's many experiences in the field as a paleontologist are what inspired him to see the large dimensions of evolution as shaping life on Earth. His encounter with nature in its raw beauty in the Gobi Desert, for example, awakened a profound sense of reverence and awe and a search to situate this in deep evolutionary time. This sense of reverence for the sacred within matter itself was an inspiration to Berry and to us in the making of *Journey*.

Teilhard's profound grappling with suffering and death in the trenches in World War I, as well as his letters to ailing family and friends, illustrate a person with immense emotional range and spiritual depth who found solace in nature and its geological expressions in deep time. However, this is not mentioned. Instead, Sideris sees Teilhard in a limited way as promoting a theory of progress and as entranced by technology. Curiously, all of us involved in the *Journey* project have had those same concerns about Teilhard. However, Sideris chooses, by and large, to override (2017, 123, 143) the critiques we have also made of him (Fabel and St. John 2003; Tucker and Grim 2016). She presumes that since we acknowledge his influence cosmologically, we accept all of his ideas on technology.

She overlooks Berry's major discussion of Teilhard's contributions and limitations, which was delivered at a talk at Columbia University in the spring of 1982 and published that fall (1982; Fabel and St. John 2003). For over thirty-five years this cogent critique of Teilhard has been available. Swimme, Grim, and I all refer to it in our writings, but Sideris has chosen not to mention it. Instead, she inaccurately accuses us of being Teilhardians in the camp of those who champion technology no matter what the unintended consequences might be. Nothing could be further from the truth. Clearly there are various interpretations of Teilhard, not simply one that blindly applauds technology.

As Berry observed early on, the technological trance is part of our contemporary challenge. He noted that Teilhard's propensity to "Build the Earth" could be used for the manipulation of Earth's systems. That is why Berry embraced instead the creative technologies of John and Nancy Todd, the green buildings of David Orr, and the eco-city designs of Richard Register. These were among Berry's many friends and colleagues (and later ours, too). He saw them as practicing appropriate technologies to scale and in alignment with Earth processes.

In a similar vein, he encouraged organic agriculture, permaculture, and biodynamic farming. He inspired numerous community-supported farms and eco-learning centers across the United States, Canada, Britain, and Australia. Many of these were led by religious women who still see themselves as Sisters of Earth. They are animated both by direct sensory contact with nature as well as a universe story perspective, which they do not experience as abstract, remote, or overreaching. Rather, they value the universe

story as increasing their appreciation for nature. This is because it awakens an understanding of the evolutionary context of deep time out of which life arose. Thus, seeds and plants, water and air, soil and ecosystems are valued as part of magnificent complex evolutionary processes. In this context, cosmos and Earth are not seen as mutually exclusive, but mutually enhancing. These many examples of environmental engagement and organic farming in a universe story context are a far cry from the exaggerated warnings regarding a technological mindset that Sideris suggests will inevitably arise from anyone who takes Teilhard or *Journey* seriously.

*Journey of the Universe Does Not Prize an Anthropocentric Worldview; Rather, It Highlights an Anthropocosmic Worldview*

Sideris opines that “*Journey of the Universe* seems to follow Teilhard’s example more than Berry’s in articulating a mystical-scientific narrative of the cosmos over and above an *ecological praxis*” (2017, 126). Not so, as we saw above and in the engaged projects discussed in *Journey Conversations*.

She claims that “Echoes of Teilhard’s privileging of universal science and a global cultural convergence, over and above cultural and religious diversity, can be discerned in the educational mission of the new cosmology” (2017, 125). This is simply not the case; *Journey of the Universe* weaves both science and humanities together with a genuine appreciation for the world’s religions and cultures.

The *Journey* project is aligned with the call of environmental ethicist Baird Callicott to “reintegrate science and its epistemology into the wider culture by expressing the new nature of Nature as revealed by the sciences, in the grammar of the humanities” (2013, 171). Such an approach expands the human perspective beyond an anthropocentric worldview to one that values the complex development of the universe, Earth, life, and humans. In this context, one can envision humans as critical partners in the further flourishing of the Earth community. This is what is called an “anthropocosmic” worldview, named as such by historian of religion Mircea Eliade and Confucian philosopher Tu Weiming. Such an anthropocosmic view is present in indigenous traditions, as well as in East Asian traditions, which have a deep sense of the human as one species among many who are assisting the processes of nature. This is a far cry from Sideris’s assertion: “I contend that these narratives may actually encourage a will to secure and perpetuate human dominion over the planet” (2017, 129).

While Teilhard may be interpreted as anthropocentric, Swimme, Grim, and I have taken to heart Berry’s early critique of this perspective in 1982. Indeed, as has been noted, there are many influences in the *Journey* project besides Teilhard, one of which is the world’s religions. Through my own studies of Confucianism, *Journey* is informed by an anthropocosmic worldview. From a Confucian perspective, this implies that humans are the

“mind-and-heart” (*hsin*) of the cosmos and Earth. As such, they complete the universe. This does not mean that humans are above nature or control it. Rather, they are partnering with the processes of nature. In Confucian thought, this suggests that agricultural processes and irrigation practices should be done with a consciousness of cooperating with the changing dynamics of nature. Certainly, the Chinese have exploited the natural world, like all other civilizations, but built into their cosmology is this cooperative partnership for the common good.

In a Confucian worldview, one is harmonizing with matter-energy (*ch'i/qi*), for the health of both people and the planet. Having spent many years studying this perspective of matter-energy in the East Asian context, it naturally flowed into the writing of *Journey* (Tucker 1989, 2006). Beyond a materialist dualist worldview is a living worldview of dynamic changing *ch'i*, which has been present in East Asian traditions for millennia. Some of this is present in current concerns regarding new materialism and is expressed in Jane Bennett's *Vibrant Matter* (2010).

The Confucian idea of partnering with nature is comparable to notions of stewardship in Judaism, care for creation in Christianity, trusteeship in Islam, devotion to the sacredness in nature in Hinduism, fostering interdependence of life in Buddhism, and embodying balance with nature in Daoism. These aspirations are being retrieved, reevaluated, and reconstructed within the world's religions, recognizing both the promise and the problems of religions for creative transformation (Grim and Tucker 2014). All of these traditions, which were woven into the *Journey* project, suggest that humans in their highest aspirations should be working in concert with nature, not simply dominating it or overexploiting it for material gain. These perspectives of restraint and reverence are central to *Journey of the Universe*.

## CONCLUSION

*Journey of the Universe*, then, is in a forty-year lineage of the need for a “new story” first expressed by Thomas Berry. It affirms the value of a science-informed evolutionary narrative that is woven with philosophical and religious insights in a poetic style. It welcomes further reflection on this narrative as a means to activate a global ethics, like the Earth Charter, as well as to encourage place-based environmental ethics in bioregions and watersheds around the world. Indeed, the Earth Charter begins with lines inspired by *The Universe Story*: “Humanity is part of a vast, evolving universe. Earth, our home, is alive with a unique community of life. The forces of nature make existence a demanding and uncertain adventure, but Earth has provided the conditions essential to life's evolution.”

We conclude, then, with a December 30, 2018, e-mail that John Grim and I received that illustrates some of the points made in this article:

My name is Emily Cho. I am currently a high school student in Illinois, and I had the pleasure of taking your Coursera course titled "Journey of the Universe: The Unfolding of Life." This was my first course in the online program. What initially drew me to the class was the title itself; this idea of a cosmic, all-encompassing journey truly captivated me, a young person who has always nursed a strong sense of wonder in regards to the world around me, but also the many worlds that live within me. As I mentioned in the discussion platforms, I believe that this course has gifted me with answers, but perhaps more importantly, it has given me the ability to dream and to ask more questions. After all, is that not the true beauty of humanity? To be able to understand one thing, but then to utilize that previously gained knowledge to continue to push the door to our current understanding of our existence, of our purpose in this vast cosmos?

In one of the video discussions, I heard an inspirational phrase that went something along the lines of "We are steeped in mystery." A piece of knowledge that I left with after finishing Course 1 was that we humans are constantly drenched in the darkness of the unknown. However, this is not something to fear. Rather, it is something that should excite us, a quality that should humble us, a truth that should push us to keep searching for other truths. Thank you. Both of you have gifted me with this hunger, with this humility but also a newfound curiosity and pride in my wonder. You have gifted me with the universe story, the human story, and guided me to begin examining my own personal story, this individualistic tale that is miraculously interconnected with the greater Earth, with the greater cosmos. (with permission from Emily Cho)

This e-mail, along with many others, indicates why *Journey of the Universe* has an appeal that evokes wonder, encourages humility, and inspires personal, social, and ecological transformation. What more can we hope for in this age of unprecedented assault on ecosystems and communities vulnerable to exploitation? Surely, the best of academia can rise to the challenges we are facing and not become mired in deconstructing and distorting constructive work for the flourishing of our shared planetary life.

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