

# Where is the Universe in the Universe Story?

BY HERMAN F. GREENE

The “Universe Story,”<sup>1</sup> the story of the evolutionary development of the universe from the Big Bang to the Ecozoic Era, is one of the key understandings and tools for those who have been influenced by the work of Thomas Berry. Anne Marie Dalton concluded that the cultural solution proposed by Berry to the ecological crisis “was simple, but radical; a new story of the universe to inform and reinvent modern culture in all of its expressions.”<sup>2</sup> In Berry’s own writings, the Universe Story is given first priority in the “Twelve Principles for Understanding the Universe” as presented in *Evening Thoughts*<sup>3</sup>:

The universe in its full extension in space and in its sequence of transformations in time is best understood as story: a story known in the twentieth century for the first time with scientific precision through empirical observation. The greatest single need for the survival of the Earth or of the human community in the twenty-first century is for an integral telling of the great story of the universe. This story must provide in our times what the mythic stories of earlier times provided as the guiding and energizing sources of the human venture.

Much of the effort of those in the Berry community<sup>4</sup> has been devoted to transmitting the Universe Story. The “cosmic walk,” a rehearsal of the Universe Story, has become an important ritual.<sup>5</sup> Many lives have been transformed by this story, and its power to inspire, motivate and inform has been proven.

For some time, however, I have had doubts about some aspects of the Universe Story, specifically about the role of the Universe Story in bringing about change, its capacity to speak across cultures, and its place in Thomas Berry’s thought. Further, I have had questions

about how the Universe Story should be used and what parts are important to establishing a cosmological grounding for an ecozoic culture. I take it as given, without discussing it here, that cosmology considered broadly (see below) is the foundation for an ecozoic society. By this I mean that an ecozoic society is one that is self-consciously and mystically grounded in the dynamics of the universe.

In this paper, I will discuss how my questions concerning the Universe Story arose, philosophical cosmology and the Universe Story, and the place of the Universe Story in Berry’s thought. I will close with a statement concerning the place of the Universe Story in the Great Work.

## How My Questions Concerning the Universe Story Arose

If you open the website [www.ecozoicstudies.org](http://www.ecozoicstudies.org) and go to “Foundational Papers,” you will see a paper entitled “Call for an Ecozoic Society.” It was the first paper I wrote based on the understandings I had received from Thomas Berry and Brian Swimme. In it I identified the New Story as one of three key building blocks of an ecozoic society. I stated:

The New Story—the narrative of the creative development of the Universe from the primordial flaring forth to the emergence of the Ecozoic Era—is one of the building blocks of an Ecozoic Society. At once a scientific account and an epic myth of origins, this story relates how things came to be and what significance and role humans have in the ongoing drama of the cosmos. The dual nature of the story, its blending of the scientific and the meaning-giving mythological, is what makes it the “New Story.” A primary source for learning about this

<sup>1</sup> By “Universe Story” I mean the story presented in Brian Swimme and Thomas Berry, *The Universe Story: From the Primordial Flaring Forth to the Ecozoic Era* (San Francisco: HarperSan-Francisco, 1992) and variant presentations of this story by those who have been drawn to it.

<sup>2</sup> Anne Marie Dalton, *A Theology for the Earth: The Contributions of Thomas Berry and Bernard Lonergan* (Ottawa, Ontario: Ottawa University Press, 1999), 2.

<sup>3</sup> Thomas Berry, “Appendix 1-Twelve Principles for Understanding the Universe,” *Evening Thoughts: Reflecting on Earth as Sacred Community*, ed. Mary Evelyn Tucker (San Francisco: Sierra Club Books, 2006), 145.

<sup>4</sup> By “Berry community” I mean the community of people whose work has been influenced by Thomas Berry, of which I am a part.

<sup>5</sup> <http://www.threeeyesofuniverse.org/cosmicwalks/TheCosmicWalk.html> (accessed June 25, 2008) gives links to several versions of the cosmic walk, which it describes in this way: “The Cosmic Walk is a ritual created by Sr. Miriam MacGillis of Genesis Farm. It has subsequently been modified and facilitated by many people around the world. The Cosmic Walk is a way of bringing our knowledge of the 14-billion-year universe process from our heads to our hearts.”

<sup>6</sup> Conversion may have some negative connotations associated with various kinds of religious conversion. At its root though, the word means “to turn around.”

<sup>7</sup> Paul F. Knitter, “A Common Creation Story? Interreligious Dialogue and Ecology,” *Journal of Ecumenical Studies*, 37:3–4, Summer-Fall 2000. 285–300.

<sup>8</sup> Dr. Knitter notes “the dangers of ‘common stories’ or ‘meta-narratives.’” The “root of this danger” he writes, *has to do with the way universals tend to skip over the reality of language—which means the reality of how language makes all that we know and say always limited and often lethal. . . . One does not have to agree fully with Michel Foucault to get his point that language is tied to power. . . . [T] he words we use and the stories we tell in order to know and communicate not only limit what we are saying; they can also be used to limit and control and devalue what others are saying. Language, in other words, is not only culturally conditioned; it is also politically and economically conditioned. This is why we of the so-called “first world” are told by our friends in the “two-thirds world” that the language that is used in cross-cultural conversations is usually the language of those with the most economic power.* *Ibid.*, 287 (citation to Michael Foucault omitted).

<sup>9</sup> While Dr. Knitter began with citing the draft of the Earth Charter, he made clear that he was addressing the common creation story advanced by Brian Swimme and Thomas Berry in *The Universe Story*. *Ibid.*, 285.

<sup>10</sup> Knitter, 286. In support of this statement he offered this quotation from page 255 of *The Universe Story*: “We are . . . at a time when these earlier traditions can no longer, out of their own resources, provide adequate guidance in the task that is before us.”

story is Swimme and Berry’s *The Universe Story*.

The New Story needs to be told in myriad ways. It needs to be taught. It needs to be read in bedtime stories. It needs to be told at the hearth and campfire. It needs to be sung. It needs to be danced. It needs to be expressed in liturgy and art. It needs to be beaten on drums. Orchestral works, operas and oratorios need to resound in celebration of the evolutionary adventure taking place throughout the Universe.

But, you might ask, as exciting as this New Story is, why is it so important? There are three reasons. First, the New Story awakens a sense of the awe and mystery of existence and of our participation in the cosmological order of the Universe. Second, the New Story reconnects the self (and so restores the self) with that which is more primordial than family, tribe, clan or nation—the self’s relationship with the natural world from which it came and of which it is a part. Third, the New Story provides a unifying mythology for all human cultures and a basis for common action in the realization of the Ecozoic Era.

If one can speak of being a Universe Story convert, I was a convert.<sup>6</sup>

At that time it was evident to me that the Universe Story was true, could be accepted by people of all cultures and would accomplish all those things described above. There were three things to emphasize in bringing about an ecozoic society: the Universe Story, bioregionalism and ecological spirituality. I suppose I realized that those people who did not accept evolution might find the Universe Story difficult to accept, but I felt that this was something more to overcome than acknowledge. The Universe Story was necessary and essential and eventually it would be the common story of all peoples.

### Transcultural Creation Story

The first time I came to have questions about the Universe Story was when I defend-

ed it vigorously in the face of what I saw as an attack on it. In 2002 I was a D.Min. student at United Theological Seminary in Dayton, Ohio, in a program on “spirituality and sustainability.” I was assigned to read “A Common Creation Story? Interreligious Dialogue and Ecology” by Paul Knitter,<sup>7</sup> who as well as being the author of the article was one of my teachers. Dr. Knitter challenged the assertion found in a draft of the Earth Charter that “for the first time in our history, we have empirical evidence for a common creation story.” He wondered if the people expounding this position were not developing another meta-narrative to be imposed by the West on others. It was the first time I had been exposed to the deconstructive post-modernist attack on meta-narratives. To deconstructionists, a meta-narrative is a narrative that one cultural group might see as universal when in reality it is an assertion of cultural superiority in support of a culturally imperialistic agenda.<sup>8</sup>

I was so offended by Dr. Knitter’s argument. I mean, did he know Thomas Berry? (He did.) How could he think the great cultural historian Berry could be the source of a culturally imperialistic meta-narrative?<sup>9</sup> Further, didn’t he understand how the secularization of global culture and the rise of fundamentalisms called for some new unifying story? And, didn’t he understand that empirical science was culturally neutral?

Dr. Knitter said that Berry called for “‘primary loyalty’ to the new creation story” and “‘announced that, unless religious communities realign their traditional creeds in view of the earth as the primary revelation and context of religious experience, they will not be able to respond adequately to the sensitivities and needs of our third-millennium world.’”<sup>10</sup> And I asserted strongly that this was indeed the case.

As an alternative to a unifying meta-narrative, Dr. Knitter said unity could be found in dealing with meta-problems such as the environmental crisis. He felt a common ethical calling would promote the needed unity in dealing with these problems better than the Universe Story.

He didn’t win the argument with me that night as we studied his paper, but I realized that a sensitive person whom I respected and who knew the Universe Story had concerns

about its role and use, and this made me wonder.<sup>11</sup>

### Based on Empirical Science

It was only in the back of my mind that I wondered about whether the Universe Story could communicate across cultures. In the forefront of my mind I felt that it could because it was based on empirical science and ultimately people would accept what had been determined to be true by science. Further I felt that the new sciences based on relativity, quantum mechanics and evolution were keys to understanding the world. The Big Bang theory had become the scientific consensus in the 1970s and seemed to provide an exceptionally well supported account of how the expanding universe began, right down to the first three seconds, even to the instant in time 13.7 billion years ago when the singularity gave way to the jubilant multiplicity that began the Universe Story. It was a marvelous story and I joined in those joyous celebrations where we reenacted the transformational moments in the unfolding story of the universe. This was science and it was spirit.

My confidence in the scientific basis of the Universe Story, however, was shaken as I became exposed to scientists who were not convinced that the Big Bang theory is valid. One of these is Dr. Timothy Eastman, a space plasma physicist and consultant (who also works for Perot Systems at NASA), who

joined with more than 200 other scientists worldwide in calling upon the scientific community to support physical cosmologists who pursue theories at odds with the Big Bang theory.<sup>12</sup> He wrote:

There is no current model in physical cosmology that adequately meets all key [scientific] observations—thus my “cosmic agnosticism.” . . . For those scholars in philosophy and religion who use research results in physical cosmology, I recommend caution and encourage the recognition at least that such debate exists and is part of ongoing research.

Dangers in too closely linking science and religion are clearly articulated by [Sir Arthur] Eddington: “The lack of finality of scientific theories would be a very serious limitation of our argument, if we had staked much on their permanence. The religious reader may well be content that I have not offered him a God revealed by the quantum theory, and therefore liable to be swept away in the next scientific revolution.”<sup>13</sup>

I had several opportunities to enter into discussions with Dr. Eastman about the problems he saw in the Big Bang theory. I began to wonder if we of the Berry community weren't making the Big Bang into a fact when it was after all a theory (or, perhaps, more completely described as a scientific research program)

<sup>11</sup> Anne Marie Dalton also expressed concern about the deconstructionist critique of meta-narratives as applied to the Universe Story: *There remains the question of the importation of Western scientific cosmology into other cultures. While this is already occurring in many ways and no doubt Western science is almost everywhere to stay, the question is whether or not one ought to propose a story that incorporates a Western scientific cosmology into other cultures. This is a vast question that requires extensive investigation both at the empirical level as to what is already the case in particular circumstances and in terms of the compatibility of the means and values of this cosmology with the cosmological stories of other cultures.* Dalton, *A Theology for the Earth*, 3.

<sup>12</sup> See “An Open Letter to the Scientific Community,” published in *New Scientist*, May 22, 2004; available at [www.cosmologystatement.org/](http://www.cosmologystatement.org/) (accessed June 10, 2008). This letter has been signed by 218 professional scientists and 187 independent researchers.

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<sup>13</sup> Timothy Eastman “Cosmic Agnosticism,” prepared for a conference on “Cosmology & Process Philosophy in Dialogue: Fundamental Philosophical Issues in Recent Cosmology and their Religious Significance” held on October 5-8, 2006, in Claremont, California, 1, citing Arthur S. Eddington, *The Nature of the Physical World* (Cambridge: Cambridge University Press 1928), 353. Dr. Eastman's paper is available at [www.ctr4process.org/programs/LSI/2006-Cosmology/EastmanT%20-%20Cosmic%20Agnosticism.pdf](http://www.ctr4process.org/programs/LSI/2006-Cosmology/EastmanT%20-%20Cosmic%20Agnosticism.pdf) (accessed March 2, 2008); and has since been revised and published in *Process Studies* 36:2 (February 2008). The quotation in text is found on page 182 of the paper as published in *Process Studies*.

Citations to page numbers in Dr. Eastman's paper in this article will, except as otherwise noted, be to the *Process Studies* edition.

In this paper, Dr. Eastman gives information on the work of scientists who question the Big Bang theory and on leading problems with the theory, which he lists in part as

- continued evidence of anomalous alignments and non-Gaussianity in data from the Wilkinson Microwave Anisotropy Probe (WMAP, see [map.gsfc.nasa.gov](http://map.gsfc.nasa.gov)), which indicate non-primordial [cosmic microwave background] components (e.g., Copi *et al.*, 2006)
  - age problem for [Big Bang] of certain high redshift objects (e.g., Jain and Dev, 2006);
  - difficulties explaining Lithium 6 (<sup>6</sup>Li) isotope observations—Given that <sup>7</sup>Li is reduced by a factor of four in stars as required for [Big Bang], <sup>6</sup>Li should be even more effectively destroyed, but is not (e.g., Steigman, 2006); and
  - direct experimental tests for “dark matter” have continued for over twenty years without any definite conclusion (e.g., Freeman and McNamara, 2006).
- Ibid.*, 184.

subject to change.<sup>14</sup> I wondered if we weren't creating a "Genesis 1 problem," that of confusing meaning-giving myth with scientific fact and, in doing so, tying ourselves "religiously" to a particular scientific theory.

The concern in this paper is not, however, who wins the scientific argument, but whether we would not be wise in developing a cosmology for an ecozoic society to follow the advice of Sir Arthur Eddington above, which is that given the lack of finality of scientific theories, we should not stake too much on their permanence.

Before leaving the issue of the grounding of the Universe Story in empirical science, I would like to look briefly at the premise that it is so grounded and the philosophical contradictions involved in stating that it is so grounded. *The American Heritage Dictionary* defines "empirical" as

1. a. Relying on or derived from observation or experiment: *empirical results that supported the hypothesis.* b. Verifiable or provable by means of observation or experiment: *empirical laws.*

<sup>14</sup> For additional information about scientists who have reservations about the Big Bang theory see *Alternative Cosmology Group Newsletter - 2007 Year End Review*, available at [www.cosmology.info/newsletter/2007\\_year\\_end.htm](http://www.cosmology.info/newsletter/2007_year_end.htm) (accessed May 10, 2008). Eric J. Lerner's article, "Cosmology in 2007: A Year-End Survey," from that issue states:

*In the past year, evidence against the conventional Big Bang model built up on several fronts. The evidence that the cosmic background radiation (CBR) is not randomly spread across the sky, as the inflationary Big Bang predicts, has become overwhelming. The contradictions between Big Bang predictions of the abundance of light elements and observations continue to get worse. In addition, new observations have contradicted the conventional concept of a universe that is homogenous and isotropic, demonstrating alignments of galaxies on extremely large scales.*

*Unfortunately, the accumulation of evidence hasn't yet sparked a general debate in cosmology over whether the Big Bang model is a valid one. But there are a few small signs that there is beginning to be a greater openness to questioning at least some aspects of the "convergence cosmology" and its ever-growing grab-bag of hypothetical constructs, like inflation, dark matter, dark energy, and quintessence. As conventional cosmologists leap ever higher into the realms of fantasy, even the popular press is starting, ever-so tentatively, to wonder if the Emperor really is naked.*

Footnotes continued to right

2. Guided by practical experience and not theory, especially in medicine.<sup>15</sup>

The Big Bang theory cannot be empirical in this sense. As Mark Stuckey, reflecting on theories regarding the development of the universe, writes, "By any reasonable definition, science is a study of reproducible phenomena, thus [physical] cosmology (as with any study of history) is not a science."<sup>16</sup> Further if it is science, it is a funny kind of science filled with imaginative constructs that cannot be based on observation, experiment or experience, such as wormholes and multiple universes which are not falsifiable in principle and thus, by some accounts, not properly scientific. Such extended hypotheses are necessarily incorporating elements of what we here call philosophical cosmology (see below) and not just scientific propositions associated, for example, with certain mathematical expressions, which may be based on problematic assumptions or involve extensive ambiguities in interpretation. In addition, the data on which it is based is scant.<sup>17</sup> As Paul Overbye writes in the *New York Times*, scientists know

#### Footnotes, cont.

As examples of such articles in the popular press, see Dennis Overbye, "Knowing the Universe in Detail (Except for That Pesky 96 Percent of It)," *New York Times* (online edition), October 24, 2006; available at [www.nytimes.com/2006/10/24/science/space/24essa.html?\\_r=1&ex=1162353600&en=7ff2f4eb8f74dc2b&ei=5070&emc=eta1&oref=slogin](http://www.nytimes.com/2006/10/24/science/space/24essa.html?_r=1&ex=1162353600&en=7ff2f4eb8f74dc2b&ei=5070&emc=eta1&oref=slogin), and "Dark Perhaps Forever," *New York Times* (online edition), June, 3 2008; available at [www.nytimes.com/2008/06/03/science/03dark.html?ex=1213156800&en=9956d8f60679b8bf&ei=5070&emc=eta](http://www.nytimes.com/2008/06/03/science/03dark.html?ex=1213156800&en=9956d8f60679b8bf&ei=5070&emc=eta) (accessed June 10, 2008).

<sup>15</sup> *The American Heritage Dictionary of the English Language*, 3d ed. (New York: Houghton Mifflin Company, 1992).

<sup>16</sup> Mark Stuckey, "Review of Paul T. Brockelman's *Cosmology and Creation, The Global Spiral*, *Metaviews* 019, 2002.02.13. available at <http://www.metanexus.net/magazine/ArticleDetail/tabid/68/id/2573/Default.aspx> (accessed June 10, 2008). William Stuckey is a professor of physics at Elizabethtown College, Elizabethtown, Pennsylvania. Paul Brockelman is a professor of religion and philosophy at the University of New Hampshire.

<sup>17</sup> The quick summary of Michael J. Disney's article "Modern Cosmology: Science or Folktale?," which appeared in *American Scientist* 95, no. 5 (September-October 2007), available at [amscicms.eresources.com/issues/pub/2007/9/modern-cosmology-science-or-folktale](http://amscicms.eresources.com/issues/pub/2007/9/modern-cosmology-science-or-folktale) (accessed June 24, 2008), is given as "Current cosmological theory rests on a disturbingly small number of independent observations." Disney writes: *My limited aim here is [to look] at the development of cosmology over the past century and to compare the growing number of independent relevant observations with the number of (also growing) separate hypotheses or "free parameters"*

*that have had to be introduced to explain them. Without having to understand the complex astrophysics, one can still ask, at an epistemological level, whether the number of relevant independent measurements has overtaken and surpassed the number of free parameters needed to fit them—as one would expect of a maturing science. . . . What one finds, in my view, is that modern cosmology has at best very flimsy observational support.* *Ibid.*, 2 (online edition).

With regard to where cosmology is now, he states:

*In its original form, an expanding Einstein model had an attractive, economic elegance. Alas, it has since run into serious difficulties, which have been cured only by sticking on some ugly bandages: inflation to cover horizon and flatness problems; overwhelming amounts of dark matter to provide internal structure; and dark energy, whatever that might be, to explain the seemingly recent acceleration. . . .*

*The historian of science Daniel Boorstin once remarked: "The great obstacle to discovering the shape of the Earth, the continents and the oceans was not ignorance but the illusion of knowledge. Imagination drew in bold strokes, instantly serving hopes and fears, while knowledge advanced by slow increments and contradictory witnesses." Acceptance of the current myth, if myth it is, could likewise hold up progress in cosmology for generations to come.* *Ibid.* 4 (online edition).

"Michael J. Disney is emeritus professor in the School of Physics and Astronomy at Cardiff University, has done research on stars, pulsars and quasars, but his main interest has always lain in galaxies and in designing novel instruments to observe them at many wavelengths. He has worked on the development of Hubble Space Telescope instruments since 1976." *American Scientist Online* [www.americanscientist.org/authors/detail/michael-j-disney](http://www.americanscientist.org/authors/detail/michael-j-disney) (accessed June 24, 2008).

the universe in detail “except for that pesky 96%.”<sup>18</sup> What is known of physical cosmology is based on some observational data, but mostly on mathematical calculations seeking to interpret,<sup>19</sup> or one could as well say extrapolating from, that data.<sup>20</sup> And perhaps most tellingly for the Universe Story as those of us in the Berry community have come to know it, the scientific underpinnings for the standard model of the universe are sometimes at variance with important philosophical understandings of the Universe Story. For example, Professor Stuckey observes that “general relativity (GR, the parent theory to [Big Bang cosmology]) admits non-dynamical alternatives. . . . As a whole spacetime is an atemporal structure.”<sup>21</sup> General relativity may not support such interpretive parts of the Universe Story as “irreversible sequence of transformations,” “cosmogogenesis” or even that “the universe is an unfolding story.”<sup>22</sup>

This discussion of whether the Universe Story is grounded in empirical science has thus far only dealt with the scientific account of the origin of our universe. The science on the history and development of Earth rests on much more observational data and thus may have a greater claim to be “empirical.” But Earth presents mysteries matching the origin of the universe and its development, and that is the origin of life and later consciousness and their development. First there is the issue of whether life and later consciousness is simply an epiphenomenon of “dead” physical elements and structures that compose living beings. In the Universe Story, the universe has had a psychic-spiritual dimension from the beginning.<sup>23</sup> Then there is the issue of how living beings have evolved. “Evolution” is not a term with a single meaning. The term covers a wide range of understandings, some of which, including both Darwinist and neo-

<sup>18</sup> Dennis Overbye, “Knowing the Universe in Detail.”

<sup>19</sup> In *The Universe Story*, Swimme and Berry lend approval to the discovery of truth about the universe through mathematical formulations. They write, “The mathematically formulated designs of the scientists are not the unrestrained fantasies of humans; they refer to something ultimately real.” *Ibid.*, 39. This does not, however, make mathematical formulations “empirical.” And one would wonder if it would not be true that some mathematical formulations of the universe produce results which, while hypothetically real, have no reality behind them.

<sup>20</sup> Dr. Eastman distinguishes the data available from direct testing in place (in situ) and that available from remote sensing. He notes how planetary and space physics have in situ data available, while astrophysics and physical cosmology necessarily rely on remote sensing:

*The domain of our direct knowledge of the cosmos has now reached to the outer solar system and is reflected in the great advances made in space physics and planetary science in the past half century through both in situ observation and remote sensing. Even without the practical possibility of in situ observation, astrophysics has made similarly dramatic progress in understanding stars, galaxies, galactic clusters, and the intervening interstellar and intergalactic medium although many fundamental questions remain for all these systems (Kundt, 2005). For physical cosmology, the fourth area of modern astronomy or space science, extrapolations from scientific foundations such as quantum theory, for which we have very high levels of confirmation, are being stretched to the limit.*

#### Footnotes, cont.

As stated by astrophysicist Wolfgang Kundt, “frontline physics is not as unique and reliable as the multiply tested physics of every-day life. The further the frontline advances towards unreachably large, or unresolvably small separations, or timescales . . . [the more] plausible assumptions have to replace redundant experience, and hasty interpretations can lead astray.” One danger, according to Kundt, is that “Our politically organized society then takes care of suppressing minority opinion” (Kundt, 2001). I personally witnessed the interplay of economic, social, political, and scientific factors on this issue while serving as a Branch Chief in the Space Physics Division at NASA Headquarters in the late 1980s. The hot Big Bang research program has been highly successful in generating fruitful scientific hypotheses and tests, and has achieved a significant level of confirmation for many hypotheses (Peebles, 1993). However, outstanding questions remain and substantial alternative cosmology models, which also have been fruitful, remain and continue to evolve. For example, Kundt favors cold big bang cosmology (see Layzer, 1990); Burbidge and Narlikar favor a quasi-steady state cosmology (Hoyle, Burbidge, and Narlikar, 2000; Narlikar, 2002); Peratt and Lerner favor an updated plasma cosmology (Peratt, 1991; Lerner, 2003), and there are others. Personally, I do not know how BB or any of these alternative approaches will stand up to future tests using burgeoning new data sets and future critical tests and falsification instances. At the present time, I see both advantages and serious problems for all options – they may all be wrong – thus, my “agnosticism” in physical cosmology. Eastman, 190-91.

<sup>21</sup> Professor Stuckey writes: *Contrary to what is often reported—spacetime is not dynamic in GR. That is spacetime doesn’t “do” anything. Neither is it “static.” Each point of the spacetime manifold “is,” “was,” and “will be” relative to some other point(s) of the manifold under various foliations into space-like hypersurfaces, i.e., collections of universal “present.” As a whole spacetime is atemporal.* Mark Stuckey, “Review of Brockelman’s *Cosmology and Creation.*”

<sup>22</sup> Professor Stuckey cites Graham Nerlich for his statement regarding the metaphysical belief in the passage of time, which he says is a myth:

*“The image of time’s passage or flow is the image of an ontically preferred time (the present) moving along a space-like dimension in which events lie ordered (which I will call supertime). The myth of passage is thus tied to deep, but generally inarticulate beliefs which give rise to a picture on which there is a dualism (or a still higher ascending regress) of times.”*

*Ibid.*, quoting Graham Nerlich, *What Spacetime Explains* (Cambridge, UK: Cambridge University Press, 1994), 233.

For a discussion of this issue by scientists, including David Bohm and Ilya Prigogine, and philosophers, including David Ray Griffin, arguing for temporality, see *Physics and the Ultimate Significance of Time: Bohm, Prigogine, and Process Philosophy*, David Ray Griffin, ed. (Albany, NY, SUNY Press, 1986).

<sup>23</sup> On page 44 of *The Universe Story*, Swimme and Berry write of “the psychic depths of the universe.” They explain on page 40, “From the quantum perspective on the evolutionary universe, each process is ultimately indivisible. No experience can be simplistically divided up into inner and outer aspects where the outer aspects such as “position” refer simply to the objectively existing universe, and the inner refers simply to the subjectivity of the experiencing being. The elements of experience cannot be assigned a simple, univocal origin.” Concerning the human, they write of how “the human being within the universe is a sounding board within a musical instrument. . . . We often forget [the] deeper psychic dimension of things that activate[s] our awareness.” *Ibid.*, 40-41. They write, “That the universe is a communion of subjects rather than a collection of objects is the central commitment of the Ecozoic.” Also they write, “There are similarities between the unity of Earth’s functioning and the unity of functioning of any other living being that justifies the use of the term *organic* to describe the inner coherence and integral functioning of the planet Earth.” *Ibid.*, 243.

Darwinist, are not compatible with the understandings of the evolution of life on Earth expressed in the Universe Story.<sup>24</sup>

Thus, it seems to me the statement that the Universe Story is based on empirical science, especially those parts pertaining to the early universe, is misleading. The statement that the Universe Story is the marriage of religion and science, as though there are no tensions between the philosophical implications of certain scientific understandings and the philosophical cosmology presented in the Universe Story, is especially misleading. None of this is to say that the understandings of contemporary science, especially the new sciences beginning with Darwin's theory of evolution and continuing through special and general relativity and quantum mechanics, and the discoveries of the physical characteristics of our world, do not have something to say to philosophical understandings of the nature of the universe. But, what is important to understand is that the Universe Story, as presented by Swimme and Berry, is as much a critique of contemporary science as it is an expression of it.

### The New Cosmology

As I began to see that there was a distinction between the "facts" described in the current scientific consensus on the origin and development of the universe and the meaning given to these facts, I began to wonder how the factual account of the development of the universe could be a cosmology. I read a paper by Wesley Wildman which stated:

Physical cosmology is a discipline within the physical sciences that famously provokes many boundary questions with metaphysical and theological significance. Some of these questions are debated in the community of scientists studying physical cosmology when they need to clarify their procedures and whether what

they are doing still counts as science. As complex as methodological questions in physical cosmology can be, these self-policing activities among scientists are just the tip of the iceberg of philosophical debate. Because physical cosmology concerns all of physical reality, at least in some aspects, its discoveries and theories and problems possess significance for the parts of philosophy and theology that ponder nature as a whole. For the sake of convenience, I shall follow Alfred North Whitehead and call these broader ventures "philosophical cosmology," collecting both philosophy of nature, ontology of nature, theology of nature, and the cosmological parts of natural theology into the semantic net.

The inferential journey from physical cosmology to philosophical cosmology is complicated—far more complicated than is sometimes supposed by eager physicists and theologians.<sup>25</sup>

I came to wonder if in our eagerness to provide through the Universe Story a contemporary unifying mythology "based" on the scientific story, we were papering over the distinction between scientific or physical cosmology and philosophical cosmology. It seemed to me that in our telling of the Universe Story there has been an unwarranted inference that the latter necessarily followed from the former in ways that were obvious.

### Philosophical Cosmology and the Universe Story

"Philosophical cosmology" means those understandings we have as humans of what kind of world we live in. They are the understandings needed for human thought and action. They are the understandings of what

<sup>24</sup> For fuller discussions of this, see John Haught, *Deeper than Darwin: The Prospect for Religion in the Age of Evolution* (Cambridge, MA: Westview Press, 2003), and John B. Cobb, Jr., ed., *Back to Darwin: A Richer Account of Evolution* (Grand Rapids, MI: Walter B. Erdman Publishing Company, 2008).

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<sup>25</sup> Wesley J. Wildman, "The Theological and Metaphysical Import of Contemporary Cosmology," prepared for a conference on "Cosmology and Process Philosophy in Dialogue: Fundamental Philosophical Issues in Recent Cosmology and their Religious Significance" held on

October 5-8, 2006 in Claremont, California, available at [www.ctr4process.org/programs/LSI/2006-Cosmology/WildmanW%20The%20Theological%20and%20Metaphysical%20Import%20of%20Contemporary%20Cosmology.pdf](http://www.ctr4process.org/programs/LSI/2006-Cosmology/WildmanW%20The%20Theological%20and%20Metaphysical%20Import%20of%20Contemporary%20Cosmology.pdf) (accessed March 2, 2008).

the universe is for us (albeit in the light of modern science).<sup>26</sup> This—philosophical cosmology—is different from what scientists need to know—physical cosmology—to provide scientific explanations of the universe and to make predictions of physical events occurring in the universe.

In the Berry community, the Universe Story is often presented as a timeline, a factual account of the history of the universe, though never only that. As I worked through these things over a period of years, I began to see there is a different way of understanding where the universe is in Thomas Berry's and Brian Swimme's Universe Story than in the timeline they present. This "never only that" is what I will write about in the remainder of this paper. This different way doesn't take away the value of the narrative account of the universe story that has been so important in the Berry community. It does provide space

between "the universe" and a particular scientific rendering of the universe story. It allows the scientific story to be what Connie Barlow and Michael Dowd call "the story of the changing story,"<sup>27</sup> while keeping those understandings, such as cosmogenesis, that we believe would be supported, at least to some degree, in any present or future scientific account of the universe<sup>28</sup> and that are most important for the humanistic enterprise of building an ecozoic society.

### The Universe Story Revisited

The Universe Story as presented in *The Universe Story* is clearly something more than the telling of the scientific account of the universe.<sup>29</sup> At the very beginning, the authors separate their work from the work of science. They state, "The scientists have arrived at detailed accounts of the cosmos but have focused exclusively on the physical dimen-

<sup>26</sup> The question whether the universe as it is for us is the universe as it is (that it is so is called in philosophy the "realistic" perspective) is one of the great debates in modern philosophy. Kant distinguished the noumenal world, the world as it is, from the phenomenal world, the world known to us by our senses. To him we know the phenomenal world through certain pre-experiential forms of knowledge, such as cause and effect and time directionality. These modes of thought are sufficient for us to navigate and manipulate the world but insufficient to know the world as it is. This meaning of the term "phenomenal world" in philosophical circles is so widely established that I have criticized Berry's use of the term in his aphorism that the universe is the text for which there is no context in the *phenomenal world*. In Berry's cosmology at times there is a certain dualism between being and existence that may make his usage of the term consistent with Kant's, though not because Berry is Kantian. For Berry it is because of the influence of Aquinas and Aristotle on his thinking. (Berry divides being and existence, rather than mind and matter.) The Universe Story as presented in the book by that name, however, rests in large part on understandings from Teilhard de Chardin and Alfred North Whitehead, both process thinkers. At least the latter is considered a philosophical realist who would perhaps say simply, the universe is the text without context. While Berry was influenced by both Teilhard and Whitehead, Swimme is more consistently consonant with their understandings than Berry.

That "the universe as it is for us is the universe as it is" is necessary to some of Berry's recent thoughts where he has stated "the

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human activates a dimension of the universe," "the human is not a dimension of the universe, but a mode of being of the universe," and even "without the human there is no universe, the human brings the universe into being." I believe that Berry means in the last phrase that the possibility of knowing the universe as universe through self-conscious awareness was always present in the universe, but it was not until the human came into being that this dimension of the universe was activated. In this sense the human is a completion and fulfillment of the universe and knows the universe as it actually is. I would offer as support this statement in *Evening Thoughts*: "The human is the model for understanding the universe, as the universe is the model for understanding the human. For certainly humans have nothing, but what they receive from the universe." *Evening Thoughts*, 121.

<sup>27</sup> "The Great Story is the story of the changing story. Whenever a new discovery is made in the sciences, this creation story changes. Change is to be welcomed—not feared." Michael Dowd and Connie Barlow, "Five Unique Characters of the Great Story," available at [http://thegreatstory.org/what\\_is.html](http://thegreatstory.org/what_is.html) (accessed June 24, 2008).

In the *Universe Story*, Swimme and Berry acknowledge that some of the science (and history) described in the book may change. "For instance, in our narratives of the emergence of the galaxies, and of prokaryotes, and of civilizations, we employ what we regard as the most convincing hypotheses, ever aware that in the future new evidence and deeper understanding might insist that alternative hypotheses be adopted." *The Universe Story*, 4.

<sup>28</sup> Continuing tensions between scientific cosmology and the philosophical cosmology of the Universe Story, however, may be expected. A current example of such a tension, previously discussed in text, is shown in how the Universe Story in the book by that name stresses temporality and irreversibility whereas in general relativity spacetime may be understood as atemporal.

<sup>29</sup> If this is true then it is equally clear that the interpretation given to the Universe Story in the first principle of Appendix 1 in *Evening Thoughts* covering "Twelve Principles of the Universe" is inaccurate or at least contradictory. In this principle the story of the universe is identified as the modern scientific story of the universe, a story which first became known in the 20th century. Specifically it states: "The universe in its full extension in space and in its sequence of transformations in time is best understood as a story, a story known in the twentieth century for the first time with scientific precision through empirical observation." The principle continues that the greatest need in our time is for an integral telling of this story, presumably the scientific story. *Evening Thoughts*, 145. As I have previously discussed, this first principle and the "Twelve Principles" in *Evening Thoughts* generally differs from Berry's traditional "Twelve Principles of the Universe" developed while he was at the Riverdale Center in New York. His first principle in the Riverdale version is "The universe, the solar system, and the planet earth in themselves and in their evolutionary emergence constitute for the human community the primary revelation of that ultimate mystery whence all things emerge into being." For the text of the Riverdale Twelve Principles and a discussion of the differences between those and the Twelve Principles in *Evening Thoughts*, see Herman Greene, "Comparing Thomas Berry's 'Twelve Principles of the Universe' written at the Riverdale Center (before 1994) with the 'Twelve Principles of the Universe' in *Evening Thoughts* (2006)," *CES Monthly Musings*, no. 9 (January 2008), available from the Center for Ecozoic Studies, Chapel Hill, North Carolina. The original Twelve Principles are also given in Thomas Berry, "Twelve Principles: For Understanding the Universe and the Role of the Human in the Universe Process," *Thomas Berry and the New Cosmology*, eds. Anne Lonergan and Caroline Richards (Mystic, CT: Twenty-Third Publications, 1987).

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<sup>30</sup> *The Universe Story*, 1.

<sup>31</sup> *Ibid.*, 2.

<sup>32</sup> *The Universe Story*, 23.

<sup>33</sup> *Ibid.*, 5.

<sup>34</sup> The most significant change in the twentieth century . . . is our passage from a sense of cosmos to a sense of cosmogenesis. . . . We have moved from that dominant spatial mode of consciousness, where time is experienced in ever-renewing seasonal cycles, to a dominant time-developmental mode of consciousness, where time is experienced as an evolutionary sequence of irreversible transformations. *Ibid.*, 2-3.

<sup>35</sup> "All that exists in the universe traces back to this . . . event [(the Big Bang)]." *Ibid.*, 21. While it is possible that the universe has its origin in a single event, the Big Bang, in my view the reality of this event as expressed in the hot Big Bang theory is not a necessary precondition for the conclusion that the universe is unified, multiform reality. For example, Alfred North Whitehead in his philosophy of organism and many others, including Albert Einstein, have held to this unity on both scientific and philosophical grounds without reliance on the Big Bang theory.

<sup>36</sup> *Ibid.*, 21.

<sup>37</sup> *Ibid.*, 23.

<sup>38</sup> *The Universe Story*, 23.

<sup>39</sup> Integral, as an adjective means: "1. of, pertaining to, or belonging as a part of the whole; constituent or component: integral parts. 2. necessary to the completeness of the whole: integral to his plan. 3. consisting or composed of parts that together constitute a whole. 4. entire; complete; whole: the integral works of a writer." *Dictionary.com Unabridged* (v 1.1). Random House, Inc., <http://dictionary.reference.com/browse/integral> (accessed: June 16, 2008).

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sions and have ignored the human dimension of the universe. [As a result] we have fractured our educational system into its scientific and its humanistic aspects, as though these were somehow independent of each other."<sup>30</sup> Science has identified "the world of reality [as] material and mechanistic in a way that "eliminate[s human] capacities for . . . intimate communion with the natural world . . ." <sup>31</sup> In contrast with this scientific cosmology, for Swimme and Berry "Cosmology aims at articulating the story of the universe so that humans can enter fruitfully into the web of relationships within the universe."<sup>32</sup> And their aim in *The Universe Story* "is to awaken those sensitivities . . . that enable a rich participation in the ongoing adventure."<sup>33</sup>

*The Universe Story* has two major parts. The first concerns the development of the universe prior to humans and the second has to do with human emergence. In the first part of the book, the authors have a pattern of presenting aspects of the scientific story (physical cosmology) followed by philosophical reflections (philosophical cosmology) on the nature of the universe. I will present these reflections, for there we will find the universe in the Universe Story.

The Universe Story is the new cosmology to Swimme and Berry because science has changed how we look at and understand the "world" (meaning the entire cosmos) and has also changed and is changing dramatically the world (meaning Earth). The world as we have come to understand it through science is something different than that ever known by the primal peoples, peoples in the classical civilizations, and even modern peoples prior to the twentieth century. In the twentieth century the new post-modern physics of relativity and quantum mechanics came into being as well as (in part, as a result of the post-modern physics) new discoveries in astrophysics, geology, biology and all fields of science. Everywhere the sciences revealed an evolutionary, time-developmental universe pro-

ceeding through a sequence of irreversible transformations through the dynamics of nature itself. We live in a cosmogenetic universe, a universe with a story. This is the fundamental dimension of the new cosmology.<sup>34</sup>

The Big Bang theory of the origin of the universe reveals, for them, a single originating event for our entire universe.<sup>35</sup> Thus the universe is a multiform development of a single reality.<sup>36</sup> Everything in the universe interacts with every other being in the universe and all are derived from some prior interaction in the universe. The universe cannot be understood apart from any being in the universe because all beings are expressions of the universe. This being the case, the universe can be understood not only from our understandings of how beings emerged in the universe, but also from our understanding of what those particular beings that emerged late in the universe's history say about the universe. The universe is no longer "out there" for humans, it is also "in here," in ourselves.<sup>37</sup> So we may ask,

"Given the existence of mountain wildflowers, what is the nature of the Flaring Forth at the beginning of time? Given Mozart's symphonies, what is the nature of the dynamics of the universe that could have led to such structure? Given the care with which a mother lark will nurture and protect her young, what is the universe made of? Given the direct influence humans have on the functioning of the planet, what are the long-range consequences human activity will have on cosmic evolution?"<sup>38</sup>

The Universe Story goes about answering these questions and it finds:

- The universe is integral in its functioning.<sup>39</sup> In everything that acts, it is the universe acting.<sup>40</sup>

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<sup>40</sup> Always and everywhere, it is the universe that holds all things together and is the primary activating power in every activity. . . . [T]he universe is not a thing, but a

mode of being of everything. Everything has its particular mode of being and its universe mode of being, its "microphase" mode and its "macrophase" mode. *The Universe Story*, 27.



- “Profound feelings . . . even [those] tinged with personal significance and with hints of destiny, are the mutual evocation of mountain, animal, world. Depth communication of primordial existence is the reality at the foundation of all being.”<sup>41</sup>
- Both “infinitely patient, slow processes and sudden, cosmic intensifications are required to carry the universe through the unfurling of its material-psychic adventure. . . . The universe is both violent and creative, both destructive and cooperative. . . . Resistance, energy, dreams: these are the sources of all violence. Another way of describing them is to speak of past, present, and future. . . . The universe thrives on the edge of a knife. . . . Every being that thrives does so in a balance of creative tension. . . . The universe is a multilevel web of different communities of beings with ancient and well-established orders of being. . . . Yet the universe brings forth new centers of creativity in this world of established relationships and long-honored traditions. . . . The universe has what can be called a sacrificial dimension. . . . Life includes in its essence hardships of many kinds. To refuse this, to refuse to accept what might be called legitimate suffering, is to opt for a reduced existence. . . . No intellectual resolution of the conundrum of suffering is possible or even desirable. . . . To eliminate the tension would be to eliminate the beauty.”<sup>42</sup>
- Einstein’s *Cosmological Principle* states that “‘All places are alike.’”<sup>43</sup> “Our extension of the Cosmological Principle, which we will call for clarity the *Cosmogenetic Principle*, assumes that . . . the dynamics of evolution are the same at every point in the universe. . . . Cosmogenesis, as well as its

microphase complement, epigenesis, refers to structures evolving in time. . . . The second law [of thermodynamics] refers to the tendency in any closed system to increase its entropy [(disorder)]. . . . The Cosmogenetic Principle is complementary to the second law [and it] refers to the dynamic of building up order. . . . The Cosmogenetic Principle states that the evolution of the universe will be characterized by *differentiation*, *autopoiesis*, and *communion* throughout time and space at every level of reality. These three terms . . . refer to the governing themes and the basal intentionality of all existence . . . . Autopoiesis points to the interior dimension of things. . . . Things emerge with an inner capacity for self-manifestation. Even the atom possesses a quantum of radical spontaneity. . . . The movement from primordial molten rocks to mammalian consciousness is a radical one, certainly. But we must avoid regarding such consciousness as an addendum or as an intrusion into reality. . . . The universe is a single if multiform energy event: Everything comes forth out of the intrinsic creativity of the universe. . . . The sentience of today’s world is an ontological creation of the evolving universe. In former times it existed as a latent possibility; now it exists in its activated or historical realization. Because creatures in the universe do not come from some place outside it, we can only think of the universe as a place where qualities that will one day bloom are for the present hidden as dimensions of emptiness. . . . This interpretation of epigenesis—that qualities arise from emptiness, from the latent hidden nothingness of being—needs also to speak of the direct and intimate relationship between

<sup>41</sup> Ibid., 48.

<sup>42</sup> *The Universe Story*, 51-60.

<sup>43</sup> More specifically, the cosmological principle in physics means that “On large spatial scales, the Universe is homogenous and isotropic [(the same in all directions)].” Wikipedia contributors, “Cosmological Principle,” *Wikipedia, The Free Encyclopedia*, en.wikipedia.org/w/index.php?title=Cosmological\_Principle&oldid=214095061 (accessed June 17, 2008).

the powers of early Earth and the potential sentience in such powers. The rocks and water and air, just by being what they are, find themselves flowering forth within sentient beings."<sup>44</sup>

- The first cells of life on Earth, the prokaryotes,<sup>45</sup> in the shape of their bodies, in the processes within their lives, in the ordering sequences of their information determined in a basal sense so much of the four-billion year Earth story that was to follow. The most impressive power of these cells was that of memory—they remembered how they were created and displayed this memory every time they reproduced themselves. And as they reproduced themselves, through genetic mutation they brought new depth to differentiation. This creative differentiation could not be held by one member of the community of cells; the learning was freely shared and remembered.<sup>46</sup> Then emerged Eukaryotes, cells with nuclei, and multicellular plants and animals we know today.
- "Life's journey is shaped by three fundamentally related, though distinct, causes: genetic mutation, natural selection, and conscious choice (or niche creation)." The reality of "chance, random, stochastic, and error" give rise to mutations. "Both *stochastic* and *error* . . . refer to an opaque dimension of evolution—a process having no fixed goal, but a process of creativity haunted by a sense of direction, by the vaguest hint of the more fertile way. . . . Natural selection is life's power to sculpt diversity in a creative fashion. . . . Mutation reveals the reality of the random, or chance in the world, natural selection announces necessity. . . . Conscious choice, or niche creation,

is an example of the cosmological dynamic of autopoiesis. . . . A species always creates its own niche. . . . The environment is fixed . . . [b]ut it is also true to say that the species 'fixes' the environment by choosing one out of a potentially infinite number of niches to inhabit. . . . The power shaping life is a wild energy; an inner urgency to pursue a particular path of life; and an immense bonding process that insists upon intimate togetherness. [Species can neither imagine nor orchestrate their future forms.] Yet their movement into their future evolution [begins] with a commitment to a vision—a vision strongly felt but seen as if fleetingly and in darkness."<sup>47</sup>

Thus, in these and other understandings presented, we come to know the universe in the Universe Story.

### **The Place of the Universe Story in Thomas Berry's Thought**

I have been critical of the prominence of the Universe Story in the Berry community. I have argued that many have conflated Thomas Berry's thought and the Universe Story. I have tried to distinguish ecozoic culture and ecozoic society as areas of Berry's thought needing more attention. Researching and writing this article, however, has given me an opportunity to reassess the Universe Story and its place in Berry's thought.

Two thoughts come to mind. The first is that just as the Universe Story is an integral telling of the story of the universe, so Thomas Berry's thought is integral. While there are many dimensions to Berry's thought, his work cannot be divided up into distinct subdivisions for all revolve around a central theme: There is an evolving universe that has a psychic-spiritual, as well as a physical, dimension and we humans were been birthed by it, are part of it and are given a special role to play in it. From this perspective, Berry's work as a whole may be understood as developing a functional cosmology. The second is

<sup>44</sup> *The Universe Story*, 66-76.

<sup>45</sup> Prokaryote means "any of the typically unicellular microorganisms that lack a distinct nucleus and membrane-bound organelles and that are classified as a kingdom (Prokaryotae syn. Monera) or into two domains (Bacteria and Archaea)." *Merriam-Webster Online*, available at [www.merriam-webster.com/dictionary/prokaryote](http://www.merriam-webster.com/dictionary/prokaryote) (accessed June 17, 2008).

<sup>46</sup> *Universe Story*, 86-92.

<sup>47</sup> *Ibid.*, 125-138.

that there are many parts to Thomas Berry's work that are often difficult to separate out because they are so integrally woven into his central theme. They relate to what is an ecozoic society and they may not be given the attention needed if they are overshadowed by the Universe Story.

### A Functional Cosmology

What does Thomas Berry mean by a functional cosmology? I think the best explanation he has given is this:

[A functional cosmology] is one that will provide the mystique needed for . . . integral earth-human presence. Such a mystique is available once we consider that the universe, the earth, the sequence of living forms and the human mode of consciousness have from the beginning had a psychic-spiritual as well as a physical-material aspect. We do not need such extrinsic spiritual interpretations of the earth process as are sometimes proposed. What we need is a sense of reverence such as we find with the great naturalists, or such as we find with some of the foremost scientists of our times . . . . Until technologists learn reverence for the earth, there will be no possibility of bringing a healing or a new creative age to the earth.<sup>48</sup>

We are now undergoing great environmental stresses such as peak oil, global warming, deforestation, desertification, etc. There is a growing interest and market for green technologies, some of them genuinely beneficial. Yet, if we operate out of a use mode (or subject-object mode) of development, what Berry sometimes called the "technozoic" mode of development, we will not ask the right questions or develop sufficient answers for a viable human future. It is only when we see ourselves as an integral part of the Earth community, as a communion of subjects, that we will be to do this.

Berry says our psyches are guided by a "distorted dream of an industrial technologi-

cal paradise."<sup>49</sup> And he says "A new revelatory experience is needed, an experience wherein human consciousness awakens to the grandeur and sacred quality of the Earth process."<sup>50</sup> This revelation comes to us beyond our active thought as an expression of the dream of the Earth. Yet this inner urging may only be appropriated self-consciously by us in language. Thus, it is important that our language be adequate to the language of Earth, so that this dream, rather than being distorted, becomes a source of guidance and power. The Universe Story is the beginning of such a language, an integral language of the universe/Earth process.

I believe the major contribution of the Universe Story is that it gives a language for an integral understanding of the universe. It also has a liturgical function, but working with this aspect requires care because the Universe Story should not be taken as a literal scientific-factual presentation. There are aspects of the Universe Story, such as we live in a time-developmental universe and the universe is a communion of subjects not a collection of objects, that we have reason to believe are not changing. Our appropriation of these insights is derived in part from the modern scientific revelation and equally or more from ancient and contemporary humanistic understandings. We believe these philosophical insights form a foundation for understanding the universe and our place in it that will last even as our scientific knowledge of the universe continues to develop and change. These foundational insights are the new cosmology; they are the universe in the Universe Story.

Before leaving this topic a word needs to be said about Berry's understanding of science. In the last few years he has often stated, "science is not a cosmology," by which I believe he means what is covered in the preceding paragraph. Yet, one cannot read his published work without seeing that he intermixed science (physical cosmology) and cosmology (philosophical cosmology). Anne Marie Dalton does a wonderful job of presenting a larger picture of science as understood by Berry:

<sup>48</sup> *The Dream of the Earth*, 66-67. The following explanation is also very helpful. Berry considers the visionaries of the 1980s and writes: *But all of these writers fail ultimately in judging the present and in outlining a program for the future because none is able to present data consistently within a functional cosmology. Neither humans as a species nor any of our activities can be understood in any significant manner except in our role in the functioning of the earth and of the universe itself. We come into existence, have our present meaning, and attain our destiny within this numinous context, for the universe in its every phase is numinous in its depths, is revelatory in its functioning, and in its human expression finds its fulfillment in celebratory self-awareness. Neither the psychological, sociological, nor theological approaches is adequate. The controlling context must be a functional cosmology.* Ibid., 87.

<sup>49</sup> *The Great Work*, 201.

<sup>50</sup> Ibid., 165.

<sup>51</sup> Dalton, *A Theology for the Earth*, 94-95, quoting Thomas Berry, "The Gaia Theory: Its Religious Implications," *ARC: The Journal of the Faculty of Religious Studies*, McGill University, 22 (1994). Dalton made these additional observations about Berry's relationship to science. [Berry] questioned the accepted premises governing the modern understanding of the nature of science. [His interpretation] that the scientific enterprise as driven by mythic visions undermined the idea of science as an objective activity unaffected by cultural, social or psychological factors. . . . Berry also criticized the scientific method as it had generally been understood since the seventeenth century. The emphasis on quantitative measurement and analytical reduction of wholes to their component parts skewed the notion of reality to a mechanistic one, which virtually excluded any consideration of the design of the whole. The new perception of scientific epistemology, on the other hand, recognized the subjective nature of all knowledge. The human relationship with nature would be that of a communion of subjects rather than a subject-object dichotomy. *Ibid.*, 78-79

In discussing the visionary power of dreams as the experience of "the depths of our own being and of the cosmic order," he made the following associations: *There we discover the Platonic forms, the dreams of Brahman, the Hermetic mysteries, the divine ideas of Thomas Aquinas, the infinite worlds of Giordano Bruno, the world soul of the Cambridge Platonists, the self-organizing universe of Ilya Prigogine, the archetypal world of C.G. Jung.* *Ibid.*, 84, quoting *The Dream of the Earth*, 197.

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In elaborating on the significance of [James Lovelock's and Lynn Margulis'] Gaia theory, Berry summarized the way in which recent scientific theories and discoveries entered into his own vision. The benefit of the Gaia theory was the effort it represented to achieve a larger pattern of interpretation than is the common focus of scientists. He insists, however, that biological and chemical studies alone are not adequate to an understanding of the "superb achievement" of the emergence of the earth. The remainder of his discussion delineated in succession elements of the larger context to which he was referring: physics and cosmology, the psychic mode of human being and the mystical implications of what science does and discovers. Scientific inquiry has as its purpose "mystical communion," he said, despite the fact that scientists might well object to this understanding of their endeavors.

The discussion of the Gaia theory provided an occasion for Berry to summarize very succinctly the role that science in general played in his own program. He did not propose to work within established and acceptable (to the scientists generally) scientific norms. Science was for him a cultural and spiritual activity. It revealed what humans had in a sense known all along in the primal expressions and the archetypal spiritual images that survived in the unconscious. Scientific knowledge may not have been based on the same kind of experience as that of the ancients, but the interpretations bore a similarity. In his words:

[O]ur scientific inquiry . . . establishes a basis for a new type of religious experience differentiated from, but profoundly related to the religious-spiritual experience of the early shamanic period of human history.

With obvious reference to Paul Ricoeur's "second naiveté," he clarified further: "We experience the universe with the delight of our post-critical naiveté." Thus, Berry saw contemporary scientific activity to be the creation of a new mythic structure that could help redirect human attitudes and actions toward a more congenial human-earth relationship.<sup>51</sup>

### An Ecozoic Society

I believe that Anne Marie Dalton was right when she wrote,

Underlying [Berry's] efforts was an unquestioned conviction that real change originated and was effected by cultural movements. Change occurred when visionary and comprehensive ideas or images . . . interacted with archetypal psychic sensibilities. . . . His motivation, assumptions and knowledge were brought to bear on what he saw to be the most devastating outcome of the kind of myths and images that empowered modern Western development.<sup>52</sup>

It is also clearly correct to say that a new story of the universe was at the heart of Berry's proposal for cultural reform.

Yet, not giving attention to Berry's proposals for the many changes that would follow on such cultural reform would greatly diminish his work and its value. I call these Thomas Berry's work on an ecozoic society in all of its political, economic and cultural dimensions and in its relationship with a larger communi-

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Berry's interpretation of cosmogenesis and of the human relationship to the natural world was primarily a mythic and/or metaphoric extension of scientific concepts and theories. He claimed that science was inherently mythic. Even terms such as

*energy, life, matter, universe and gravitation have metaphoric and mysterious connotations.* *Ibid.*, 84.

<sup>52</sup> Dalton, *A Theology for the Earth*, 56.

ty of life. It is true that Berry wrote that the Universe Story is a functional cosmology,<sup>53</sup> but he also said that ecology is a functional cosmology.<sup>54</sup> In *The Great Work* he wrote:

Ecology is not a course or a program. Rather it is the foundation of all courses, all programs and all professions because **ecology is a functional cosmology**. Ecology is not a part of medicine; medicine is an extension of ecology. Ecology is not a part of law; law is an extension of ecology. So too in their own way the same can be said of economics and even the humanities.<sup>55</sup>

And in *Evening Thoughts* he wrote: “**Ecology is a functioning cosmology**. . . . [In education it] is *the course, the curriculum, the structure of the entire educational program*. It is the basis of medicine; it is the context for law. *Ecology* refers to the way the universe functions.”<sup>56</sup> If his writings on the Universe Story did not make it clear, Berry wanted to emphasize that he wanted cosmology brought down to Earth—moreover cosmology was of the Earth and how it functioned in our everyday world.<sup>57</sup>

Alongside Anne Marie Dalton’s insight into Thomas Berry’s call for cultural reform, I would call attention to his statements that (1) the “central flaw” in human development is our “mode of consciousness that has established a radical discontinuity between the human and other modes of being and [has bestowed] all rights on the humans”;<sup>58</sup> and (2) “the historical mission of our times is to reinvent the human—at the species level, with critical reflection, within the community of life systems, in a time-developmental context, by means of story and shared dream experience.”<sup>59</sup>

While the Universe Story is often offered as story and shared dream experience, it should also be understood that it is a source for critical reflection on how our species needs to reestablish its presence within the community of life systems in a world that proceeds through a sequence of irreversible transformations. It was certainly this for Berry as he wrote about the ecological age, technology, economics, education, religion, patriarchy, bioregionalism, wilderness, geography, ethics,

politics, energy, food, law, geobiological and cultural history, civilizational structure and orientation and more.

Thomas Berry set forth a comprehensive vision of a new, viable mode of human civilizational presence on Earth. It is the vision of an ecozoic society. While the Center for Ecozoic Studies does not disregard the Universe Story, it is this part of Berry’s work, the ecozoic society, that we have emphasized. It is reflected in our mission statement, “The mission of the Center for Ecozoic Studies is to offer a vision of an ecozoic society, and contribute to its realization through research, education and the arts.”

### **The Place of the Universe Story in the Great Work**

Is it necessary to distinguish that part of Thomas Berry’s work which focuses on the Universe Story from that which focuses on the ecozoic society? Is one more important than the other? Are the potential problems with the Universe Story, such that it should be emphasized less?

Perhaps we can answer these questions with reference to what is “the Great Work.” Berry says the Great Work into which we and our children are born comes in response to the devastation of the planet caused by human activity. We are facing a breakdown in the life systems that can only be understood by comparison with events that marked the great transitions in the geo-biological eras of Earth’s history, such as the extinction of the dinosaurs and countless other species when the Mesozoic Era ended and our present Cenozoic Era began.<sup>60</sup> Our task is to move from our modern industrial civilization with its devastating impact to that of benign presence. It is the task of moving from the terminating Cenozoic Era into an emerging “Ecozoic Era” when humans will be present to the Earth in a mutually enhancing way and become functional participants in the comprehensive Earth community. He writes, “Cultural selection is now a decisive force in determining the future of the biosystems of the Earth.”<sup>61</sup>

I believe Berry is correct that the mythos of science must be changed. In as much as science as presently understood and the industrial technology and human aspirations and

<sup>53</sup> See, e.g., “[T]he story of the universe expresses a functional cosmology.” *Evening Thoughts*, 22.

<sup>54</sup> *Ibid.*, 30.

<sup>55</sup> *The Great Work*, 84 (emphasis added).

<sup>56</sup> *Evening Thoughts*, 30-31 (emphasis added).

<sup>57</sup> To restore a sense of the earth as matrix of the human, as primary norm of all human values and activities, is a difficult change, but one which cannot but have its own validation in confrontation with the devastating consequences of the existing mode of cultural coding. This new coding, which might be designated as “ecological,” might better be designated simply as a “functional cosmology.” The integration sought is not simply an ideal put forward as an abstract goal, but as a process that is already taking place throughout America. It is presently the most vital phase of the American Experience. Hundreds, even thousands, of Movements in this direction are already taking place in every phase of American life: in law and medicine, in agriculture, in architecture, in commerce and industry, in education. *The Dream of the Earth*, 121 (emphasis added).

<sup>58</sup> *The Great Work*, 4.

<sup>59</sup> *Ibid.*, 159.

<sup>60</sup> *The Great Work*, 3.

<sup>61</sup> *Ibid.*, 4.

cultural influences to which it has given rise in the modern period are responsible for our current malaise, then the integral telling of the Universe Story, the new cosmology, is the antidote and healer. It will not, however, be such an antidote and healer if it is lost to the very understanding of science to which it serves as an antidote. We must understand where the universe is in the Universe Story.

Telling the story as a narrative intermixing of contemporary scientific understandings and philosophical understandings presents difficulties, because, as I have touched on earlier, Berry's cosmology is in significant ways at odds with the presuppositions of naturalistic science.<sup>62</sup> When the Universe Story is told without awareness that such conflicts exist problems may arise in cross-cultural communication because traditional wisdom is also at odds with such presuppositions but not necessarily with Berry's philosophical cosmology.

Overemphasizing the scientific account of the development of the universe may have the effect of obscuring Berry's philosophical cosmology because it may be thought that the point of the story is primarily to validate the science rather than to bring about an understanding of the inner dynamics of the universe and the human place in it. Berry's cosmology does not have a stake in, for example, whether or not the Big Bang theory is true. Rather it has a stake in such understandings as the universe is characterized by subjectivity, diversity and communion, has a psychic-spiritual dimension from the beginning, and is interdependent and

time-developmental.<sup>63</sup> Berry's cosmological understandings may be presented without reference to the timeline given in the standard scientific account of the development of the universe. In such a presentation, stories from nature would be told to ground Berry's understandings, but not a serial narrative from the Big Bang to the present.<sup>64</sup>

The scientific story is what it is. It may stand up for ages to come or be replaced by a new and different understanding. In my view the later parts of the story, parts in particular concerning Earth,<sup>65</sup> where we have more direct knowledge, will likely be more durable than those parts where the empirical evidence is slight . . . that "pesky 96% of the universe." The new cosmology may be presented using a serial narrative based on the scientific story, but it is not identical to it. The new cosmology is the philosophical cosmology in which science needs to function, not the physical cosmology of science. If I were to use the serial narrative in presenting the new cosmology now, I would probably say something like, "I want to tell you a story of wonder, beauty and intimacy, it is the story of our universe. I will tell you a story of the contemporary scientific understanding of the universe but I will go beyond science to discuss meaning and value. This is a story of a new cosmology for understanding the inner dynamics of the universe and our place in it." I would tell the story as a mythic telling of "the epic of evolution."<sup>66</sup>

There needs to be an integral telling of the universe story and that this is essential to the

<sup>62</sup> Berry's cosmology, for example, includes teleological causation (the universe is about something), pan-experientialism (subjectivity in all beings), the ultimate significance of time (irreversible sequence of transformations), and non-sensory perception (the dream drives the action) all of which are rejected by naturalistic science and much of contemporary Western philosophy.

<sup>63</sup> I find Alfred North Whitehead's philosophy of organism helpful in both comprehending and expressing these understandings. For a description of Whitehead's influence on Berry, see Dalton, *A Theology for the Earth*, 47-50. For a defense of cosmological understandings such as these, see generally David Ray Griffin's *Whitehead's Radically Different Postmodern Philosophy* (Albany, NY: SUNY Press, 2007). Chapters one and two of this book discusses how modern/enlightenment philosophy and postmodern deconstructive philosophies differ from the understandings given by such "process thinkers" as Berry, Chardin and Whitehead. While Griffin does not discuss Berry and Chardin, I believe there basic positions on the matters mentioned in the text accompanying this footnote are the same though their methods of arriving at their positions are different.

*Footnotes continued to right*

#### *Footnotes, cont.*

<sup>64</sup> Such a serial narrative is, in any case, a high level abstraction from the many, many parallel and simultaneous stories being told in nature. Every tree, every species, every bioregion tells the "great story" of the universe. Here is a liturgy that appeared in the bulletin of my church that expresses this:

#### **CALL TO WORSHIP**

LEADER: Tell me a story.

PEOPLE: **A story of where we are, and how we got here, and the characters and roles that we play.**

LEADER: Tell me a story.

PEOPLE: **A story that will be my story as well as the story of everything around me, a story that brings us together in a valley of community, a story that brings together the human family with every living being in the valley.**

LEADER: Tell me a story.

PEOPLE: **A story that brings us together under the arc of**

**the great blue sky in the day and the starry heavens at night, a story that will drench us with rain and dry us in the wind.**

LEADER: Tell me a story.

PEOPLE: **A story told by humans to one another, a story that the wood thrush sings in the thicket and the river recites in its downward journey.**

LEADER: We come to share our stories, grateful for the Surrounding Spirit which draws us together in songs of joy.

Bulletin of Worship, Binkley Memorial Baptist Church, Chapel Hill, NC, July 6, 2008.

<sup>65</sup> Our scientific knowledge of the physical aspects of Earth is to a large extent based on empirical data. The problems in our scientific knowledge of Earth comes more in understanding, life, consciousness, morality and sentience.

See footnote 20 for a discussion of the gradations in the empirical data available to science

Great Work. The purpose of this essay is to caution those who undertake the telling of this story to be mindful of the distinction between scientific cosmology and philosophical cosmology. They cannot be fully separated, nor should they be, but if one were to err on one side or the other in bringing about the kind of cultural change envisioned by Berry, I would emphasize the philosophical understandings such as “subjectivity, diversity and communion,” without over-identification with current scientific theories or “facts” derived from those theories.

Telling the Universe Story is very important in the Great Work. The Great Work is to re-integrate humans into the dynamics of Earth with the understanding that Earth is a communion of subjects and not a collection of objects. The Universe Story gives us language

for an integral understanding of human and nature and awakens awe at the grandeur of existence.<sup>67</sup> When thinking of the new cosmology, however, one should recall that Thomas has also said “ecology is a functional cosmology” and that our effort is to bring into being an ecozoic society.

Neither of these emphases (that on the Universe Story and that on an ecozoic society), however, can be reduced to the other, for in Berry’s writing there is an abiding theme of the “Great Self”—the universe, and the “small self”—our individual lives and communities. He follows the ancient Chinese in calling on heaven (the order of the universe) to be our guide, and also, perhaps, Jesus who prayed, “Thy kingdom come, on Earth as it is in Heaven.”

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**Footnotes, cont.**

<sup>66</sup> Berry comments,

*There are two ways for an adult to explain things to a child. One is with mythic explanations, such as are handed down to us through the earlier stories of the classical world or through the stories of indigenous peoples. The other is through the more scientific accounts that are now available to us. Apparently the true inner appreciation of things can be communicated only through story form whether mythic or epic. This has led some perceptive scientists to appreciate that the evolutionary story needs to be narrated as an epic narrative. An epic is a sequence of heroic deeds, generally with some historical basis, deeds of immense importance that are carried out with more than ordinary, even mysterious power. So the universe needs to be understood in its amazing sequence of transformations to produce the wondrous world about us. The coherent sequence of transformations narrated in understandable, non-technical, even literary language, this is what makes the entry of scientists into the epic form so acceptable to both scientists and to the more general reader.*

Thomas Berry, “Foreword,” Dalton, *A Theology for the Earth*, viii.

I believe that the Universe Story is intended to offer such an epic.

<sup>67</sup> With regard to this awe, one might remember that Berry has not generally favored an exalted religious or mystical relation to the universe, but rather a reverence for Earth such as that expressed by Rachel Carson in *Sense of Wonder* (New York: HarperCollins, 1998), and Lewis Thomas in *The Lives of a Cell* (New York: Penguin, 1978.)