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The Dream Drives the Action: An Exploration of the Meaning of Cosmogenesis in Thomas Berry's
Functional Cosmology

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THE DREAM DRIVES THE ACTION:
AN EXPLORATION OF THE MEANING OF COSMOGENESIS IN THOMAS
BERRY'S FUNCTIONAL COSMOLOGY

Jessica Fraser

Thesis submitted to the
Faculty of Graduate and Postdoctoral Studies
In partial fulfillment of the requirements
For the MA in Theology

Faculty of Theology
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ISBN: 0-494-14907-8

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To my parents

THE DREAM DRIVES THE ACTION:
AN EXPLORATION OF THE MEANING OF COSMOGENESIS IN THOMAS
BERRY'S FUNCTIONAL COSMOLOGY

Jessica Fraser

Abstract

This thesis is an exploration of the meaning of cosmogenesis, the universe as an emergent process. Focused on its utilization within the functional cosmology of Thomas Berry, this paper investigates what implications the discovery of cosmogenesis can have for human-Earth relations in light of the ecological crisis within the framework of religion. It also queries into how the insights of cosmogenesis can be lived out in concrete ways, and what that might look like in religious terms.

The first half of the thesis explores the meaning of cosmogenesis in its physical details, locates the work of Berry within the larger dialogue on religion and science, and identifies how the concept functions in Berry's cosmology. The second half discusses how Christianity can operate within a functional cosmology that takes the insights of cosmogenesis seriously, discusses contemporary Christian responses to the ecological crisis, and offers several ways that such insights can be manifested as praxis.

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ACKNOWLEDGMENTS

I wish to thank my advisor, Dr. Heather Eaton, for her direction, advice, insight, and encouragement during this project. Thank you also to Dr. John van den Hengel and Dr. Miriam Martin for their attentive reading and considered responses to my thesis. Further, I want to acknowledge the support of other members of the Faculty of Theology at Saint Paul University, as well as the mentorship of Dr. Stephen Scharper, at the University of Toronto.

In addition to the academic direction and encouragement that has allowed me to research and write this thesis, significant financial support was provided to me. The funding of the Social Sciences and Humanities Research Council and a generous bursary from the Presentation Sisters of Newfoundland made it possible for me to put all of my energy into this endeavour.

Finally, I could not have completed this without my family. Thank you to my parents, who have supported me from the first moment I conceived of returning to school. To my son Justin, who is my reason and motivation for everything, and to my partner Richard, who supports my vision.

INTRODUCTION

Thomas Berry says in his book *The Great Work: Our Way into the Future*, “The dream drives the action.”¹ The ecological crisis is the result, he argues, of a nightmare, a distorted dream of industrial prowess fuelled by arrogance toward the natural world, relentless use of the riches of the earth community, and a vision of human dominance that would lead to release from the finitude of the human condition and wealth beyond our imagining.² A new dream is needed if humans are to engage in restorative action on behalf of the Earth and its entire community of beings. I am interested in exploring in this thesis how the concept of *cosmogogenesis* can assist in that dream, by informing a new vision of human relationships with the rest of the planet Earth. Further, I am intrigued by the question of how it can foster new ways of living that are in consonance with the natural world.

Cosmogogenesis is the understanding of the universe as an emergent process.³ It is

¹ Thomas Berry, *The Great Work: Our Way into the Future* (New York: Bell Tower, 1999), 201.

² Thomas Berry, *The Dream of the Earth* (San Francisco: Sierra Club, 1988).

³ The term *cosmogogenesis* was coined by Pierre Teilhard de Chardin in his work on evolutionary processes and their implications for human beings. See Pierre Teilhard de Chardin, *The Phenomenon of Man* with an introduction by Sir Julian Huxley (London: Wm. Collins Sons & Co. Ltd.; New York: Harper & Brothers, 1959). It has since been reissued as *The Human Phenomenon*, new translation by Sarah Appleton-Weber (Brighton: Sussex Academic Press, 1999). See also idem, *The Future of Man* translated from the French by

for me the most complete and radical concept for understanding the universe, Earth and human beings. Its discovery changes everything that we have previously understood, and has important implications for how human beings live in relation to each other and the rest of the natural world. Understanding cosmogenesis is for me a religious issue, particularly within the context of the ecological crisis. The physical world human beings inhabit is for me imbued with the mystery of the Sacred. The ecological crisis, the destruction of a world full of meaning, demands a religious response.

I am also interested in how religious understanding is lived out in concrete ways. Therefore in this thesis I do two things. First, I explore what cosmogenesis means in its particular details, and ask what implications it has for new human-Earth relations, particularly within the framework of religion. Second, I ask how human beings can live out the insights of cosmogenesis, and what that might look like in religious terms. This two-fold exploration is done within the context of the ecological crisis.

Thomas Berry, one of the leading thinkers of the twentieth century, has worked extensively in this area. His work is the result of more than six decades of scholarship and is the most comprehensive contribution to the problem of the ecological crisis within a religious framework to date.⁴ It is based on three things; the scientific understanding of

Norman Denny (London: William Collins Sons & Co., Ltd.,; New York: Harper & Row, 1964).

⁴ Ordained as a Passionist priest in 1942, Berry went on to receive a doctorate in history from the Catholic University of America in 1949. After that, he went to China to study the Chinese language for a year, then returned and studied Sanskrit. He undertook these endeavours to gain more comprehensive understanding of the great world religions of China and India. He is a Thomistic scholar, having studied the work of Thomas

the universe as cosmogenesis, a comprehension of the psychic-spiritual dimension of the material world and the urgency of worldwide ecological devastation. Out of this, Berry advocates a ‘functional cosmology’ that recognizes the psychic-spiritual as well as physical-material dimensions of the universe.

To set the ground for understanding Berry’s work it is necessary to begin with the two aspects of current reality that inform it, in particular his functional cosmology. They are the account of the universe as it is now understood, and an understanding of the ecological crisis.

The Universe as We Know It

Here is a brief overview of what science knows about the universe. Despite the massive amount of information that has been gained on its nature, most of the universe is a mystery to human comprehension. Nevertheless what we do know changes dramatically how we understand the physical world.

Aquinas in Latin for more than a decade. After his studies, Berry taught world religions, at Seton Hall University (1956-1961), St. John’s University in New York (1960-1966), and at Fordham University from 1966 until he retired in 1979. (Anne Lonergan and Caroline Richards, eds., *Thomas Berry and the New Cosmology* [Mystic, CT: Twenty-Third Publications, 1988, c1987], 2; Anne Marie Dalton, *A Theology for the Earth: The Contributions of Thomas Berry and Bernard Lonergan* [Ottawa: University of Ottawa Press, 1999], 1.)

Approximately thirteen billion years ago, the universe came into being. Through what is commonly called the Big Bang, and others more eloquently term the initial flaring forth,⁵ time and space began, and started an emergent process of development into ever greater complexity and transformations.

In less than a millionth of a second, the universe burst forth with a gigantic mass of energy that contained all of the energy that would ever exist. In this bursting forth, both time and space were created. In the primordial flare particles were scattered into this expanding space. These particles would soon stabilize into nuclei and provide the seeds for the development of galaxies one billion years later.

The precise rate at which the universe flared forth into being is astonishing. If its expansion had varied by even one trillionth of a percent faster or slower the universe would have either collapsed or ceased developing.⁶ All existence, including humans is utterly dependent on the exquisite precision of the universe's initial expansion.

After one billion years of darkness, the universe emerged into the form of galaxies, one hundred billion of them, including the Milky Way. The galaxies then brought forth billions of stars of diverse size and intensity. The Milky Way gave existence to one particular star, Tiamat, out of whose remnants came the planets of our solar system, five billion years ago. The creativity of the elements on each of these

⁵ Brian Swimme and Thomas Berry, *The Universe Story: From the Primordial Flaring Forth to the Ecozoic Era: A Celebration of the Unfolding of the Cosmos* (San Francisco: HarperSanFrancisco, 1992).

⁶ Swimme and Berry, *Universe Story*, 18.

planets varied, and only Earth managed to find the right balance to eventually bring forth life four billion years ago, in the form of single cells.

The birth of life so long ago on the Earth led to ever more astonishing developments. The Earth, through its primal cells, developed the power of photosynthesis, to convert energy from the sun into food. These same primal cells, called prokaryotes, altered the chemistry of the Earth by releasing oxygen into its atmosphere, land and waters.⁷ The later eukaryotic cells developed sex and the eating of other living beings, giving the universe the “intimacy of sexual bonding [and] the intimacy associated with ecosystemic predatory-prey relationships.”⁸

Single cellular life thrived in this way for more than three billion years. Then, 700 million years ago the first multicellular creatures came into existence. One hundred million years after that, all sorts of sea life existed, from worms to coral, sponges to starfish, leeches to vertebrates. This sea life led to the plants and animals that we are familiar with today, as well as untold species lost in the last five mass extinctions, the fifth one being that of the dinosaurs, sixty-seven million years ago.

The universe as we know it emerged further in the form of mammals 200 million years ago. With them came a remarkable and important development in the continuing history of the universe. Mammals “developed emotional sensitivity, a new capacity

⁷ Ibid., 9.

⁸ Ibid.

within their nervous systems for feeling the universe.”⁹

Four million years ago, and twenty-six million years after the emergence of the first primates, from whom we are descended, human beings emerged into the community of birds and bacteria, monkeys and rats, whales and spiders, elephants and earthworms. Into this communion, without which we could not exist, humans came to know themselves. Through human beings, the Earth took ever more complex form, developing tools two million years ago and the ability to make fire half a million years after that. The human capacity as complex, symbolic creatures for celebration, begun thirty-five thousand years ago, and recognition of the rhythms of seasons and plant cycles twenty thousand years ago, comes out of our development of conscious self-awareness. The reality of conscious self-awareness is itself an aspect of the universe.

What we witness through the human venture is a rapid increase in the transformations in and complexity of the Earth. From the time of the first tools, through the dramatic social transformation of settled villages,¹⁰ to the power of human activities in the twentieth century, we see not only the rise in consciousness but also a huge change occurring:

...a momentous change in human consciousness [is] in progress. Humans discovered that the universe as a whole is not simply a background, not simply an existing place; the universe itself is a developing community of beings. Humans discovered by empirical investigation that they were participants in this fifteen-

⁹ Ibid., 10.

¹⁰ Ibid.

billion-year sequence of transformations that had eventuated into the complex functioning Earth.¹¹

What we have been discovering is that not only are humans direct descendants from the initial flaring forth but so is our human consciousness. Consciousness itself has emerged through the sequence of transformations that brought forth the galaxies, Earth, photosynthesis, and mammals. Through the particular form that consciousness is taking in humans, we are discovering the ability for the universe to discover itself. Culture and education including the sciences are ways that the universe, through the human community, does so. In addition, through scientific studies,¹² we are finding that the universe, of which we still know very little, is not a thing or a place; it is a process. As Berry and physicist Brian Swimme put it, “The universe is a single multiform development in which each event is woven together with all others in the fabric of the space-time continuum.”¹³

The gift of conscious self-awareness is part of the universe itself, emergent from the primordial flaring forth. Humans, Berry tells, are the universe, through conscious self-

¹¹ Ibid., 14.

¹² Some examples of material accessible to the introductory reader are John D. Barrow and Joseph Silk, *The Left Hand of Creation: The Origin and Evolution of the Expanding Universe* (Boston: Unwin Paperbacks, 1983); Eric Chiasson, *The Life Era: Cosmic Selection and Conscious Evolution*, illustrated by Lola Judith Chaisson, 1st ed. (New York: Atlantic Monthly Press, 1987); Heinz R. Pagels, *The Cosmic Code: Quantum Physics as the Language of Nature* (New York: Bantam Books, 1983); and Joseph Silk, *The Big Bang: The Creation and Evolution of the Universe*, foreword by Dennis Sciama (San Francisco: Freeman, 1980).

¹³ Ibid., 21.

awareness, reflecting upon itself.¹⁴ This reality of the origin and evolution of the universe is not in itself a story. Berry believes, however, that it is best understood as a narrative.

Cosmogenesis

What I have just summarized is the basic data of the universe as it is interpreted by Berry. For him the data reveals the cosmos as a cosmogenesis, the universe as a time-developmental sequence of irreversible transformations.¹⁵ For Berry, cosmogenesis is a reality of mythic dimension that forms the basis of a functional cosmology. It is the leap from cosmos to cosmogenesis that I am exploring in this thesis, with its mythic implications for a functional cosmology, religion, and living in consonance with the life systems of the Earth.

It is not just the discovery of the emergent universe, exciting as it is, that informs Berry's ideas. He is motivated by the deepening ruin occurring everywhere on the planet, in the natural world and by extension in human lives. For Berry one cannot discuss the ecological crisis without also reflecting on the mysteries and meaning of cosmogenesis. Therefore, a summary of that crisis is necessary to properly situate Berry's work and this examination.

¹⁴ Berry argues this in *Universe Story* with Swimme, and it is a core assumption in his scholarship. See Berry, *Dream of the Earth*, and idem, *Great Work*.

¹⁵ Swimme and Berry, *Universe Story*, 2. Berry describes cosmogenesis in this way throughout his work.

Life in Crisis

From the remarkable recounting of the origins of the universe process and its development into the human venture as we now know it, we now turn to a different account. This story emerges from within human civilization in the past one hundred years or so, but which threatens life throughout the entire Earth. This is a brief chronicle of the ecological crisis.

Some of the details of the ecological crisis are commonly known. Climate change, namely global warming at the hands of humans, is the single largest environmental threat to the survival of humans and other life systems on the planet Earth.¹⁶ Species are becoming extinct at a rate that parallels the loss of the dinosaurs.¹⁷ Deforestation is

¹⁶ Human activity has led to carbon dioxide concentrations in the atmosphere that are the highest in 400,000 years; the rate of increase is accelerating. Increased concentrations of carbon dioxide in the Earth's atmosphere lead to higher global temperatures. This causes heat waves and droughts, more frequent and severe tropical storms, warmer bodies of water, the melting of polar ice caps, and other symptoms of climate instability. Such climate change affects and will continue to drastically affect virtually every aspect of human and Earth systems: from species loss to global poverty, food production to international security. For those who feel hopeful about efforts to reduce carbon emissions, such as the Kyoto protocol, something must be kept in mind. The only country reluctant to sign the agreement, the United States, is the biggest contributor of carbon emissions. It produces 24 percent of global emissions, while housing only 5 percent of the world's population. And while the current American government claims as its main focus the war on terrorism, climate change, by increasing the incidences of tropical diseases and malnutrition, already kills more people than terrorism does. See Worldwatch Institute, *2005 State of the World: Redefining Global Security* (NY: W. W. Norton & Company, 2005), 111-113; and Worldwatch Institute in cooperation with the United Nations Environment Programme, *Vital Signs 2003: The Trends that are Shaping our Future* (NY: W. W. Norton & Company, 2003), 21.

¹⁷ "Prominent scientists now consider the world to be in the midst of the sixth great wave of animal extinctions. The fifth wave finished off the dinosaurs 65 million years ago. Unlike previous episodes, however, people are the cause of most of the sudden die-offs. One quarter of the world's mammal species are threatened or nearly threatened with extinction; of the other well-surveyed species, 25 percent of reptiles, 21 percent of amphibians, and 30 percent of fish are threatened." Worldwatch Institute, *2003 State of the World* (NY: W. W. Norton & Company, 2003), 15-16.

rapidly reducing the homes of inestimable numbers of animals, birds, and insects, as well as reducing the amount of arable land on which to grow food and provide shelter and fuel for human communities.¹⁸ Water, air and soil pollution through innumerable toxic chemicals are destroying what is left to live on, causing cancer, immunodeficiency diseases and birth defects in animals and humans.¹⁹

The responsibility for such ecological devastation lies primarily in the North, in industrial countries. The results, however, are most immediately felt in the South, in developing countries where related factors of poverty, war and government instability exacerbate the vulnerability of populations to the ecological consequences of Northern consumption.²⁰ Northern consumption patterns are devastating the Earth: twenty percent of the global population is consuming eighty percent of the world's resources.

It is not enough to say that individual species of plants and animals are disappearing, or that specific bodies of water are being increasingly polluted. What gives this crisis a magnitude of unimaginable consequences is that humans are destroying the very life systems in which we and other living creatures reside. We are destroying not

¹⁸ About half of total forest cover around the world has disappeared since humans invented agriculture, and of what is remaining, almost of third of it is "...seriously fragmented or otherwise degraded." In addition, wetlands have shrunk by over 50 percent in the past century. See Worldwatch, *2003 State of the World*, 8.

¹⁹ Worldwatch, *2003 State of the World*, 6-7. Many of these toxins increase as they move up the food chain; others have half-lives that measure in hundreds and thousands of years, meaning that they will continue to contaminate earth systems for generations.

²⁰ This has led, among other things, to what are now termed 'environmental refugees,' people displaced from their homes and land because of ecological destruction. It is estimated that there are 30 million environmental refugees worldwide. See Worldwatch, *2005 State of the World*, 40.

only regions, such as forests, wetlands and coral reefs, but the ability for those regions to regenerate. Berry warns us that:

Not only are we bringing about the extinction of life on such a vast scale, we are also making the land and the air and the sea so toxic that the very conditions of life are being destroyed. As regards basic natural resources, not only are the non-renewable resources being used up in a frenzy of processing, consuming, and disposing, but we are also ruining much of our renewable resources, such as the very soil itself on which terrestrial life depends.²¹

The Ecological Crisis: Levels of Interpretation

There are several levels²² at which ecological degradation is a crisis, or a pandemic.²³ The first level is the physical: the loss of biodiversity, global warming, and increasing lack of potable water. The second level is at the intersection of ecological damage with local and global economic systems. This level is immediately familiar to many as the effects of environmental degradation are most often discussed in relation to their impact on economics. The cost of switching to more sustainable fuel sources; the expense, and who should pay, of cleaning up toxic spills; the cost-benefit analysis of organic versus traditional agriculture; these are a few examples. The third level adds the

²¹ Ibid., 9-10.

²² This delineation of the levels of the ecological crisis comes from the work of Heather Eaton, "This Sacred Earth at the Nexus of Religion, Ecology and Politics," *Pastoral Sciences* 23-1 (2004): 35-54 and idem, "This Sacred Earth: The Ecological Crisis and Religion," (class lecture at Saint Paul University, Ottawa), September 4, 2003.

²³ The too brief survey of the ecological crisis I have provided points to a misnomer. The word 'crisis' does not begin to convey the magnitude of what we are facing. Given its pervasiveness into every life system on the planet, and its geographical range, it may be more accurate to term what is happening on Earth at human hands an ecological *pandemic*.

social implications of ecological deterioration, relating such factors as the loss of arable land and clean water to poverty, war and community dissolution.

The fourth level, however, points beyond the physical, economic and social effects of the ecological crisis. The fourth level identifies the ideology of domination that is at the root of the ecological pandemic. At the heart of this ideology is a worldview within Western societies that believes humans have the right to dominate the natural world. It is this worldview that has caused human beings in industrialized countries²⁴ to become the most pernicious creatures on the face of the Earth. It is at this fourth level that my thesis is concerned.

It is also at this fourth level that Berry works. His position is that the understanding of the universe as cosmogenesis can provide new insight into human-Earth relations and offer guidance in halting further ecological deterioration. Berry believes that cosmogenesis can provide the basis for a functional cosmology. The functional cosmology he advocates is one that reorients humans in relationship with the life systems of the planet and fosters ecological healing.

In the following pages, I explore the meaning of cosmogenesis as Berry comprehends it, and how it grounds his functional cosmology. In Chapter One, I define cosmogenesis in some detail, and discuss how it can be understood in its psychic

²⁴ Nor are all individuals in those countries equally to blame. Class, race, and gender differentiations manifest in many ways, not the least of which in determining who has access to high levels of consumption, and who has the most ability (and responsibility) to change their lifestyle patterns.

expressions. I also locate Berry's work within the larger dialogue on religion and science, including the new cosmology as it generally operates from an understanding of cosmology as worldview.

In Chapter Two, I investigate more fully how cosmogenesis functions in Berry's cosmology. Because his work is formed in part from his understanding of how human communities function, I outline some of the key aspects of this formation.

In Chapter Three, I ask how Christianity can play a role in a functional cosmology that takes the insights of cosmology seriously. I describe how Christian theologians who take seriously the ecological crisis have responded, and explore more specifically the work of four scholars who offer theological insights based on the new cosmology.

In Chapter Four, I ask how humans might act concretely on the insights of cosmogenesis, particularly within a theological framework. I suggest that we need to *live cosmogenesis*, and describe how we might do so. Further, I offer several theological ways of understanding and living cosmogenesis within a functional cosmology.

In Chapter Five, I present a brief conclusion to the thesis, and return our attention back to the urgent context of Berry's work and my own, the ecological crisis.

CHAPTER ONE

COSMOGENESIS AND THE NEW COSMOLOGY

To our clearer vision the universe is no longer a State but a Process. The cosmos has become a Cosmogenesis.

Pierre Teilhard de Chardin, *The Future of Man*

I begin my exploration of cosmogenesis with a discussion of what cosmogenesis means in its physical and psychic dimensions, including how those dimensions are interpreted by Pierre Teilhard de Chardin, the first contemporary scholar to work with the concept, and Thomas Berry. Berry's functional cosmology and his understanding of cosmogenesis are situated within a larger dialogue between religion and new physics,¹ the scientific discoveries of the emergent universe. In order to appreciate the unique and comprehensive contribution Berry is providing, I then discuss the larger religious return to a new cosmology occurring in light of the emergent universe. The concern of Berry and of this thesis lie at the intersection of religion, cosmology and the ecological crisis.

¹ New physics refers to the revolution that has occurred in physics since the early twentieth century as a result of new ideas about space, time, mind, and matter. Paul Davies says: "In the first quarter of [the twentieth] century two momentous theories were proposed: the theory of relativity and the quantum theory. From them sprang most of twentieth-century physics. But the new physics soon revealed more than simply a better model of the physical world. Physicists began to realize that their discoveries demanded a radical reformulation of the most fundamental aspects of reality." (Paul Davies, *God and the New Physics* [New York: Simon and Schuster, 1983], vii.) Equivalent terms are *new science* and *postmodern science*.

Cosmos as Cosmogenesis

To understand how the discoveries of the universe as cosmogenesis² affect and function as worldview in the work of Berry, it is first necessary to understand what cosmogenesis means in its physical-material reality, and its psychic-spiritual dimension.

Cosmogenesis: A Physical-Material Reality

The universe began with what is commonly called the Big Bang. At that moment, time and space as we know them came into existence. The universe did not emerge into space and time; space and time came forth as part of the existence of the universe. Space is continually expanding, and time is moving forward in one direction. This is an essential aspect of cosmogenesis; the universe does not exist as a place in space and time; it is a *process* that is continually changing, growing and moving. To say that cosmogenesis is time-developmental is to say that it is completely bound into historical time; “the universe has a life history.”³

² Some scientists refer to the universe as *self-organizing*; this is another way to describe cosmogenesis. It means the capacity of the universe to “organize itself into a sequence of greater wholeness and sentience.” (Arthur Fabel, “The Dynamics of the Self-Organizing Universe,” in *Cross Currents* 35 Summer/Fall 1987, 169.) This has become increasingly recognized to occur in the universe’s subatomic forms as well as its “galactic clusters and planetary civilizations” (Ibid., 171). However, Berry and scientists such as Brian Swimme (*The Universe is a Green Dragon: A Cosmic Creation Story* (Santa Fe, NM: Bear, 1985); *The Hidden Heart of the Cosmos: Humanity and the New Story* (Maryknoll, NY: Orbis Books, 1996); and *The Universe Story* with Thomas Berry), David Layzer, (*Cosmogenesis: The Growth of Order in the Universe* (New York: Oxford University Press, 1990)) and Ilya Prigogine (*From Being to Becoming: Time and Complexity in the Physical Sciences* (San Francisco: W.H. Freeman & Co., 1980)) prefer to emphasize the notion of *becoming* that cosmogenesis signifies; the universe is a becoming rather than a being.

³ Paul Davies, *The Cosmic Blueprint: New Discoveries in Nature’s Creative Ability to Order the Universe* (New York: Touchstone, 1988), 200.

An important implication of the time-developmental reality of cosmogenesis is that everything that exists today in the universe, including human beings, can refer backwards to the primordial origin point of the phenomenal order as part of its own history. The life history of the universe is also the life history of the human, as well as the entire life systems on the planet Earth. We all live within the same context of time.

The context of time in the universe as cosmogenesis relates to another aspect of its definition; that the process of the universe is also irreversible. Cosmogenesis is moving inexorably forward in time in an *irreversible* sequence of events. Paul Davies, a theoretical physicist who writes on the new physics and its implications for theology, asserts, “The universe as a whole is engaged in unidirectional change.”⁴ That it is irreversible is recognized by observation, as well as by referring to the law of thermodynamics.⁵ The universe moves in an irreversible direction from lesser to greater complexity; it progresses from less complex states of energy, matter and consciousness to increasingly more complex forms, including forms of energy and consciousness.⁶ This is a key aspect of cosmogenesis, one to which Berry pays close attention. As Berry and physicist Brian Swimme point out, irreversibility recognizes that the garden planet of the

⁴ Davies, *Cosmic Blueprint*, 14.

⁵ *Ibid.*, 15-20.

⁶ *Ibid.*, 20.

universe, the Earth, is a “one-time endowment.”⁷

Yet the movement of cosmogenesis is not a linear one; it is a sequence of transformations or symmetry breaks⁸ that include “reversals and surprises, sporadically advancing in various directions and then as suddenly collapsing,”⁹ but progresses on the whole toward greater complexity. Transformations occur out of the pushing against what currently exists, and the entry of new variables, signifying a tremendous creativity on the part of the universe, and the movement forward that is definitive of cosmogenesis:

If one subscribes to inflation [theory of the origin of the universe], or something like it, then it seems that the universe started out with more or less nothing at all, and step by step the complex universe we see today evolved through a sequence of symmetry breaks. Each step is highly irreversible and generates a lot of entropy, but each step is also creative, in the sense that it releases new potentialities and opportunities for the further organization of the universe. No longer is creation regarded as a once-and-for-all affair, it is an ongoing process which is still incomplete.¹⁰

When Berry and others refer to the universe as *emergent*, they are referring to the transformational aspect of cosmogenesis. For something to emerge in the universe means that its reality cannot be predicted by its earlier aspects; it is more than the sum of its parts.

Life is a prime example of such a transformation in form in the universe that

⁷ Swimme and Berry, *Universe Story*, 246.

⁸ This is Davies’ term for transformations. See Davies, *Cosmic Blueprint*, 83.

⁹ Swimme and Berry, *Universe Story*, 99.

¹⁰ Davies, *Cosmic Blueprint*, 129.

could not have been predicted to occur. The emergence of life is still a mystery to scientists. Life rose from the massive electrical storms that raged over the planet Earth four billion years ago,¹¹ but the probability of such an event is so impossible, it begets the same questions about life's origins as the very existence of the universe itself does. The birth of the first living cell represents a transformation of the grandest sort, asymmetric in time and space. The continuing evolution of life from its primal beginnings is the clearest example of the cosmogenetic principle of complexity, transformations, and time-bound irreversibility.

There are three interlinked characteristics of cosmogenesis. Differentiation, subjectivity and communion govern every aspect and form of the universe process. Differentiation refers to the vast diversity of forms and ways of being in the universe; cosmogenesis means that the universe is continually moving into distinct ways of expressing itself. In the history of the universe, nothing is identical. “[I]n the universe, to be is to be different. To be is to be a unique manifestation of existence.”¹²

Cosmogenesis is also governed by subjectivity, that some refer to as autopoiesis.¹³ “Autopoiesis refers to the power each thing has to participate directly in the cosmos-

¹¹ Swimme and Berry, *Universe Story*, 85-6.

¹² *Ibid.*, 74.

¹³ Anne Primavesi, *Sacred Gaia: Holistic Theology and Earth System Science* (London: Routledge, 2000).

creating endeavour.”¹⁴ This expands the understanding of subjectivity to belong to more than just living beings. It is the interior dimension of everything; the creativity and spontaneity of all things to continually emerge through space and time.

Communion organizes cosmogenesis into a single process. It speaks to the reality that everything is related to each other from the origin moment of the universe. It also speaks to the fact that “nothing is itself without everything else.”¹⁵ Everything exists, directly or indirectly, in relation to everything else. We cannot understand anything in cosmogenesis without studying it in relationship to other beings and processes in the universe. Swimme and Berry give the example of the bear, who is meaningless unless understood in the web of relations it has to the forest that is its home, and the salmon that is its food.¹⁶ Similarly, we cannot interpret the existence of the sun in our solar system without placing it in the context of the galactic community from which it emerged.¹⁷

In cosmogenesis differentiation, subjectivity and communion also exist in relationship to one another. They are qualities of each other; subjectivity is highly diverse, and emerges in communion with each other. Differentiation occurs in relationship to what exists around each aspect of the universe, out of the inner creativity and spontaneities of each thing. Communion can only happen among distinct subjectivities, different

¹⁴ Ibid., 75.

¹⁵ Ibid., 77.

¹⁶ Ibid.

¹⁷ Ibid.

relationships with both past and present aspects of cosmogenesis. Cosmogenesis then cannot be fully grasped without taking into consideration all three of these characteristics.

Where do humans fit into cosmogenesis? In a word, everywhere. Human beings are an extremely recent addition to the world of the universe, emerging as *Homo habilis* 2.6 million years ago, and as modern *Homo sapiens* only forty thousand years ago.¹⁸ Yet, the understanding of cosmogenesis points to the fact that we are integral to the universe process itself; we are a result of the cosmogenetic process. We are, in fact, genetically related to everything else that exists in the universe, because everything that has come to be has emerged from the initial elements of the birth of the universe. Nothing exists from outside of the primordial origin moment. It took the whole course of cosmogenesis to create the contemporary human, as well as modern-day lions, red cardinals, dandelions, peonies, and all other living beings.

Humans too are the universe evolving. It took thirteen billion years to create the hand that writes this thesis, as well as the human consciousness that is reflecting on the process that is cosmogenesis. Cosmogenesis has led to increasingly complex forms of consciousness of and in the universe. In the human we find a self-reflective form of consciousness that is the ability of the universe to reflect upon itself. Davies discusses this:

Way back in the primeval phase of the universe, gravity triggered a cascade of self-organizing processes – organization begets organization – that led, step by

¹⁸ Ibid., 274.

step, to the conscious individuals who now contemplate the history of the cosmos and wonder what it all means.¹⁹

Cosmogenesis: Its Psychic-Spiritual Dimension

Alongside the complex and mysterious physical reality of this emergent process, there is a psychic-spiritual dimension to cosmogenesis that has also existed from the beginning in time and space. Human existence necessitates that it must be so:

Empirical inquiry into the universe reveals that from the beginning in the galactic systems to its earthly expression in human consciousness the universe carries within itself a psychic-spiritual as well as a physical-material dimension. Otherwise human consciousness emerges out of nowhere.²⁰

Berry is not the first to consider the psychic as well as physical realities of cosmogenesis. Pierre Teilhard de Chardin is a contemporary scholar who explores the spiritual reality of cosmogenesis and resultant theological implications. Teilhard de Chardin is a strong influence on Berry's thinking in this regard. Therefore, I will turn next to an overview of Teilhard de Chardin's work on cosmogenesis.

Pierre Teilhard de Chardin

Teilhard de Chardin explores a scientific-religious understanding of the universe as a cosmogenesis that grounds human beings and human consciousness firmly within the evolutionary process, and explores what religious meanings these discoveries have.

¹⁹ Davies, *Cosmic Blueprint*, 135.

²⁰ Berry, *Dream of the Earth*, 131.

Even before the findings of new physics that date the universe to a specific birth point, Teilhard de Chardin was discussing the empirical insights into the nature of the evolutionary universe. In *The Phenomenon of Man* he outlines galactic evolution, Earth evolution, life evolution, and the evolution of consciousness.²¹ In moving from the immense scale of the galaxies to the development of the interior minds of living beings, Teilhard de Chardin affirms the unity of all matter, even in its different forms of existence and relationship to the rest of the physical-material order.²² He also affirms the reality of all of these existing in a cosmogenesis: “from its most distant formulations matter reveals itself to us *in a state of genesis* or becoming.”²³

Teilhard de Chardin discusses the increasing complexity of matter in the universe, of moving from less to more complex forms through transformations that could not have been forecasted, such is their emergence so surprising and novel. One such emergence is of life into the material order. With the appearance of life cosmogenesis attains a new significance:

Life, and most particularly the extreme point of Life represented by Mankind, is not simply a *state*. It is on the contrary...a vast, directed movement, bound up with the very structure of the Cosmogenesis. It has a ‘thread’ which cannot be suppressed, and which must continue to show itself, in no way impaired, but respected, utilized and expressed, until (and at this point more than ever) it

²¹ Pierre Teilhard de Chardin, *Phenomenon of Man*.

²² This is what Berry refers to as communion, differentiation, and subjectivity, described in the earlier section on cosmogenesis.

²³ Teilhard de Chardin, *Phenomenon of Man*, 49. Original emphasis.

reaches the highest, most conscious forms of its development.²⁴

This means for Teilhard de Chardin that the existence of living beings cannot be explained away as an exception to the rules of the universe, nor studied as if we live in a vacuum separate from the continuing emergence of cosmogenesis. Teilhard de Chardin insists that we ask what it means that humans, the most complex form of living beings, have emerged from such vast and mysterious origins as the universe process. He speculates on how we come to understand ourselves as a species emergent within cosmogenesis, not only in our biological specificity, but also in our social organization and ability to think and to reflect on ourselves in the context of the universe.

Teilhard de Chardin considers the emergence and development of consciousness as an integral part of cosmogenesis. All that exists has developed from the initial beginnings of the universe. "Everything, in some extremely attenuated extension of itself, has existed from the very first."²⁵ This must then include consciousness, which is a result of the increasing complexity of existence in and of the universe. In humans, consciousness develops to the point of conscious self-awareness, where we are able to reflect upon ourselves, evolution, and the questions of where we came from and why we are here. Because cosmogenesis itself has led to human consciousness, "The

²⁴ Pierre Teilhard de Chardin, *Future of Man*, 227. In *Phenomenon of Man* (idem) Teilhard de Chardin explains in great detail the evolutionary process that is cosmogenesis. In *Future of Man* he interprets its mythic dimensions.

²⁵ Teilhard de Chardin, *Phenomenon of Man*, 78.

consciousness of each of us is evolution looking at itself and reflecting.”²⁶

Such an assertion, grounded in studies of the nature of the universe and of evolution, has radical implications for the place and role of the human in the phenomenal order. Teilhard de Chardin asked what some of these implications might be. For him, the entire universe is embedded with meaning; we live in a ‘divine milieu’²⁷ that holds insights into the nature of the divine in the very processes of cosmogenesis. In addition, humans are active participants in cosmogenesis; such participation is where we find our ultimate fulfillment.²⁸ Teilhard de Chardin refuses the tendency to a transcendental spirituality that removes humans from the material context in which we reside and have our being, and recognizes the universe as our home:

On the one hand the overwhelming vastness of the Cosmos need no longer appal us, since the indefinite layers of Time and Space, far from being the lifeless desert in which we seemed to be lost, show themselves to be the bosom which gathers together the separate fragments of a huge Consciousness in process of growth.

While Teilhard de Chardin’s particular religious vision is limited in several ways,²⁹ he offers a radical change in thinking about the human and the sacredness of the

²⁶ Ibid., 221.

²⁷ Pierre Teilhard de Chardin, *Le Milieu Divin: An Essay on the Interior Life* (London: William Collins Sons & Co. Ltd.; New York: Harper & Brothers, 1960).

²⁸ Teilhard de Chardin, *Future of Man*, 285.

²⁹ Teilhard de Chardin offered a vision of Christianity as integral to the evolution process itself, with primacy over other traditions. He was unable to recognize the deep wisdoms offered by other major world religions, including Indigenous traditions. See John Grim and Mary Evelyn Tucker, “Introduction,” in

self-organizing universe itself.

Thomas Berry: Cosmogenesis as Narrative

For Teilhard de Chardin, the understanding of the universe as cosmogenesis holds great meaning into the realities of the material world, the interior realm of the human, and the psychic processes that have existed from the beginning and bring all of it into being.

For Berry, the best way to understand cosmogenesis is as a narrative:

Only now can we see with clarity that we live not so much in a cosmos as in a cosmogenesis best presented in narrative; scientific in its data, mythic in its form.³⁰

Although the universe itself is not a story, Berry believes that we can best understand the continuing emergence of the universe into ever greater diversity and complexity in time and space as a narrative. The sequence of transformations makes for a time-developmental tale full of surprises and mystery, drama and celebration. The understanding of cosmogenesis provides us, in the opinion of Berry, with a new sacred story:

With all the inadequacies of any narrative, the epic of evolution does present the story of the universe as this story is now available to us out of our present experience. This is our sacred story. It is our way of dealing with the ultimate mystery whence all things come into being.³¹

Teilhard in the 21st Century: The Emerging Spirit of Earth, ed. Arthur Fabel and Donald St. John (Maryknoll, NY: Orbis Books, 2003), 1-12.

³⁰ Swimme and Berry, *Universe Story*, 229.

³¹ Thomas Berry, *Great Work*, 31.

This sense of cosmogenesis as sacred narrative speaks to the need for a mythic understanding of the universe grounded in scientific information that takes seriously its psychic-spiritual dimension. While previous scientific stories of the universe have presented it as a strictly material reality essentially meaningless in its larger implications, Berry's understanding of cosmogenesis provides a challenging counterpoint. Precisely *in* the time-developmental sequence of irreversible transformations lies meaning. In the story of cosmogenesis we discover that the universe:

has from the beginning its mysterious self-organizing power that, if experienced in any serious manner, must evoke an even greater sense of awe than that evoked in earlier times at the experience of the dawn breaking over the horizon, the lightning storms crashing...for it is out of this story that all of these phenomena have emerged.³²

For Berry, cosmogenesis as narrative provides a new way of understanding values, "returning to a more traditional context of story as our source of understanding and value."³³ It provides us with a functional cosmology, giving humans an effective compass for navigating new relationships of the human to the rest of the world.

Berry is operating out of an understanding of cosmology that has been emerging in the areas of religion and science as a response to the findings of new physics regarding the nature of the universe. However, how Berry understands and utilizes cosmogenesis in his functional cosmology is unique. To gain a sense of how this is so, I will now discuss

³² Swimme and Berry, *Universe Story*, 238.

³³ Berry, *Dream of the Earth*, 136.

the larger field of cosmology within religion in which Berry's work is situated.

The New Cosmology

The general definition of cosmology is our understanding of the universe and the place of humans within it. Humans have been fascinated about the origin and nature of the universe and our place within it for millennia;³⁴ the history of cosmology in philosophy, science and religion is well documented.³⁵

Despite such a broad definition of cosmology, its meaning has tended to be relegated to the disciplines of physics and astronomy, without consideration of the human being. The return to cosmology³⁶ however, and the idea of a new cosmology in light of the emergent universe is about a return to a more comprehensive worldview than has been afforded people in the age of modern science.³⁷

³⁴ "Ever since human beings first began to reflect about, and to discuss, their situation within the world of natural things, their most comprehensive ambition has been to talk sense about *the Universe as a Whole*." Stephen Toulmin, *The Return to Cosmology: Postmodern Science and the Theology of Nature* (Berkeley: University of California Press, 1982): 1. Original emphasis.

³⁵ See for example Langdon Gilkey, *Nature, Reality, and the Sacred: The Nexus of Science and Religion* (Minneapolis: Fortress Press, 1993); John Haught, *The Cosmic Adventure: Science, Religion and the Quest for Purpose* (New York: Paulist Press, 1984); Stanley Jaki, *God and the Cosmologists* (Edinburgh: Scottish Academic Press, 1989); Carolyn Merchant, *The Death of Nature: Women, Ecology, and the Scientific Revolution* (San Francisco: Harper & Row, 1980); Ilya Prigogine and Isabelle Stengers, *Order Out of Chaos: Man's New Dialogue with Nature*, with a foreword by Alvin Toffler (London: Heinemann, 1984); and Toulmin, *The Return to Cosmology*.

³⁶ This phrase comes from Toulmin, *Return to Cosmology*.

³⁷ In the science of modernity, claims are made to an objective neutrality in scientific study that is free from bias. In addition, it employs a "mechanistic, deterministic, deterministic, materialist and reductionist approach to the universe and its composition" (Heather Eaton, "A Critical Inquiry into an Ecofeminist

Cosmology as Worldview

Cosmology as worldview³⁸ reminds us of ancient definitions of cosmology as thinking about the whole; how everything fits together in the universe. Rosemary Radford

Ruether defines cosmology as:

a view of the relation of humans to the rest of nature, their relation to each other in society, and their relation to the ultimate foundation source of life (the divine). They have been blueprints for what today we would call a combined scientific, social-ethical, and theological-spiritual worldview.³⁹

Cosmology,” [Ph. D. diss., University of St. Michael’s College, 1996],18.), separating study into separate specialized domains. This bias of ‘objectivity’ in turn has led to viewing the universe as static and functioning like clockwork. Postmodern science however has challenged and discredited such claims to objectivity and pointed out that the findings of science are often determined in part by the contexts, beliefs and worldviews of the scientist. This has led the way to a new view of the universe as emergent and self-organizing. For scientific discussions on the new postmodern science directed to lay readers, see for example Davies, *Cosmic Blueprint*; Swimme and Berry, *Universe Story*; Stephen Hawking, *A Brief History of Time: From the Big Bang to Black Holes*, introduction by Carl Sagan (NY: Bantam Books, 1990, c1988.) and Erich Jantsch, *The Self-Organizing Universe : Scientific and Human Implications of the Emerging Paradigm of Evolution* (NY: Pergamon Press, 1980). The new cosmology emerging out of postmodern science is nothing less than revolutionary in its challenges to modern science, philosophy and theology. An excellent source for further understanding such revolutionary implications see Prigogine and Stengers, *Order Out of Chaos*.

³⁸ In her thesis, Eaton points out that not all who are engaged with the new cosmology agree with equating cosmology with worldview, including Carl Sagan, Stephen Jay Gould, and Stephen Weinburg. (Eaton, “Critical Inquiry,” 34-50

³⁹ Rosemary Radford Ruether, *Gaia and God: An Ecofeminist Theology of Earth Healing* (San Francisco: HarperSanFrancisco, 1992), 32.

Cosmology and worldview are not identical; worldviews do not always hold a cosmological frame of reference, and cosmology can be more narrowly defined in strictly physical terms. Nevertheless, there is a dialectical relationship occurring between worldview and cosmology. Worldview can shift our understanding of the universe; our cosmology. In turn, the discoveries of new physics are inviting us to shift our worldviews in light of the realities of the emergent universe and the crises around the world today, including mass injustices, war, and the ecological crisis.⁴⁰ The new cosmology, grounded in the discoveries of the emergent universe, is challenging many to consider a return to cosmology as worldview. This can be considered a cultural paradigm shift that is occurring in many disciplines, including science and theology:

Thus the new cosmology is situated within the recasting of a cultural worldview, as part of the paradigm shifts which are transforming the foundational beliefs and values of modernity. It is a combination of several branches of science, natural history, metaphysics, philosophy and human historical consciousness, in a post-Enlightenment, postmodern world.⁴¹

Religious Responses to the New Cosmology

There has been a range of responses to the new cosmology emerging in light of recent scientific discoveries. Understanding cosmology as worldview is one position that at this date is in the minority in the religion and science dialogues.⁴² Within Christian

⁴⁰ Ibid., 29.

⁴¹ Ibid., 34.

⁴² The conversation between religion and science has been occurring for a long time. An important book

theological discourse, a range of responses exists,⁴³ including high Christological positions,⁴⁴ doctrinal revisioning,⁴⁵ and belief in intelligent design.⁴⁶ While Christianity is the most significant dialogue partner to date in conversation with new physics, other religious traditions are also beginning to engage with the new cosmology. Notable examples exist within Islam⁴⁷ and Judaism.⁴⁸

that describes historical and current challenges in the science and religion conversation is Ian Barbour, *Religion and Science: Historical and Contemporary Issues* (San Francisco: HarperSanFrancisco, 1997). See also Willem B. Drees, *Beyond the Big Bang: Quantum Cosmologies and God* (La Salle, IL: Open Court, 1990).

⁴³ This text is not going to consider the discourse of creationists, who reject the empirical discoveries of evolution, and attempt to offer a literalist reading of the biblical creation stories as an equal scientific alternative to evolution. There is a wide range of material that addresses this controversy. See for example Niels Henrik Gregersen and Ulf Görman eds., *Design and Disorder: Perspectives from Science and Theology* (London: T & T Clark, 2002); Roger E. Timm, "Scientific Creationism and Biblical Theology," in *Cosmos as Creation: Theology and Science in Consonance*, ed. Ted Peters (Nashville: Abingdon Press, 1989): 247-264; and Larry A. Witham, *Where Darwin Meets the Bible: Creationists and Evolutionists in America* (Oxford: Oxford University Press, 2002).

⁴⁴ For an example of this position, see Stanley Jaki, *God and the Cosmologists*. This position interprets the findings of the new cosmology within existing classical categories..

⁴⁵ Doctrinal revisionists work with specific Christian doctrines and rework them in light of the new cosmology. See for example Ted Peters, *Science, Theology, and Ethics* (Aldershot, Hants, England; Burlington, VT: Ashgate, 2003); idem., ed., *Cosmos as Creation: Theology and Science in Consonance* (Nashville, Abingdon Press, 1989), and Vincent Brümmer ed., *Interpreting the Universe as Creation: A Dialogue of Science and Religion* (Kampen, the Netherlands: Kok Pharos Pub. House, 1991).

⁴⁶ The intelligent design theory is also called the anthropic principle and ranges from weak to strong in its orientation. ranges from weak to strong in its orientation. The weak anthropic principle states that the universe was made 'just right' for life to appear. The strong anthropic principle follows the idea that the universe was manifested from the beginning for the purpose of intelligent beings. Proponents of the weak anthropic design argument are John D. Barrow and Frank J. Tipler, *The Anthropic Cosmological Principle* (Oxford: Clarendon Press, 1986). Perhaps best know for the strong anthropic principle is M.A. Corey, *God and the New Cosmology: The Anthropic Design Argument* (Lanham, MD: Rowman & Littlefield, 1993).

⁴⁷ See Ted Peters, Muzaffar Iqbal and Syed Nomanul Haq, ed., *God, Life, and the Cosmos: Christian and Islamic Perspectives* (Aldershot, Hants, England: Ashgate Publishing Limited, 2002).

⁴⁸ See H. Avidan, "Judaism, Science and Cosmology in the Late Twentieth Century," in *Scriptura* (No. 61,

Cosmology as worldview is being engaged within religion most significantly in response to the ecological crisis. Although not all ecological theology is working with the discoveries of new physics,⁴⁹ the scholars who are working at the intersection of the new cosmology and the ecological crisis are generally working with a definition of cosmology as worldview, and recognize ecological exploitation as a crisis in cosmology.

Ecological Crisis as a Crisis in Cosmology

As I discussed in the Introduction, one level at which the ecological crisis is understood is at the level of worldview. At this level, ecological deterioration is a

1997): 129-137; David Novak and Norbert Samuelson, eds., *Creation and the End of Days: Judaism and Scientific Cosmology: Proceedings of the 1984 Meeting of the Academy for Jewish Philosophy* (Lanham, MD: University Press of America, 1986); Daniel C. Matt, *God and the Big Bang: Discovering Harmony between Science and Spirituality* (Woodstock, VT: Jewish Lights Pub., 1996).

⁴⁹ For scholarship within the world religions that is addressing the problem of the ecological crisis, the Religions of the World and Ecology Series is a helpful resource. See Christopher Key Chapple, ed., *Jainism and Ecology: Nonviolence in the Web of Life* (Cambridge, MA: Harvard University Center for the Study of World Religions: Distributed by Harvard University Press, 2002); Christopher Key Chapple and Mary Evelyn Tucker, eds., *Hinduism and Ecology: The Intersection of Earth, Sky, and Water* (Cambridge, MA: Harvard University Center for the Study of World Religions: Distributed by Harvard University Press, 2000); Richard C. Foltz, Frederick M. Denny, and Azizan Baharuddin, eds., *Islam and Ecology: A Bestowed Trust* (Cambridge, MA: Harvard University Center for the Study of World Religions: Distributed by Harvard University Press, 2003); N.J. Girardot, James Miller, and Liu Xiaogan, eds., *Daoism and Ecology: Ways Within a Cosmic Landscape* (Cambridge, MA: Harvard University Center for the Study of World Religions: Distributed by Harvard University Press, 2001); John A. Grim, ed., *Indigenous Traditions and Ecology: The Interbeing of Cosmology and Community* (Cambridge, MA: Harvard University Center for the Study of World Religions: Distributed by Harvard University Press, 2001); Dieter T. Hessel and Rosemary Radford Ruether, eds., *Christianity and Ecology: Seeking the Well-Being of Earth and Humans* (Cambridge, MA: Harvard University Center for the Study of World Religions: Distributed by Harvard University Press, 2000); Hava Tirosh-Samuels, ed., *Judaism and Ecology: Created World and Revealed Word* (Cambridge, MA: Harvard University Center for the Study of World Religions: Distributed by Harvard University Press, 2002); Mary Evelyn Tucker and Duncan Ryuken Williams, eds., *Buddhism and Ecology: The Interconnection of Dharma and Deeds* (Cambridge, MA: Harvard University Center for the Study of World Religions: Distributed by Harvard University Press, 1997); and Mary Evelyn Tucker and John Berthrong, eds., *Confucianism and Ecology: The Interrelation of Heaven, Earth, and Humans* (Cambridge, MA: Harvard University Center for the Study of World Religions: Distributed by Harvard University Press, 1998).

consequence of distorted worldviews regarding the role of human beings toward the natural world. Such an attitude has led to a blindness, an inability to see what is all around us. There are two ways in which this blindness is manifest. The first is the blindness of privilege; most of the results of Northern consumption are experienced in the South. Western societies do not witness the most blatant results of our actions. "Few of us ever encounter the toxic waste, soil degradation, or unsustainable mining and logging that support our collective consumption patterns."⁵⁰

The second blindness is to the worldview that is leading us in such destructive patterns. It is one of radical discontinuity from the rest of the natural world, where humans see ourselves as somehow separate from the life systems of the planet, and with all rights given to ourselves.⁵¹ It is a pathology that has infested our very consciousness, to the degree that it is difficult to recognize this worldview, either as being wrong or even existing in the first place.

The ecological crisis at this level is a crisis in cosmology; it points to the distorted relations humans have to the universe and the Earth and all that reside in it.⁵² Recognizing the crisis in this way entails realizing that the solutions to healing the crisis go beyond shifts in fuel type for our vehicles or wiser use of natural resources:

⁵⁰ Worldwatch, *2003 State of the World*, 8.

⁵¹ Berry, *Great Work*, 4.

⁵² Due to limitations of space, I am unable to go into greater detail on the relationship between cosmology and the ecological crisis historically. See Carolyn Merchant, *The Death of Nature: Women, Ecology, and the Scientific Revolution* (San Francisco: Harper & Row, 1980).

Our present situation is the consequence of a cultural fixation, an addiction, an emotional insensitivity, none of which can be remedied by any quickly contrived adjustment.⁵³

It requires, Berry tells us, a conversion experience, a metanoia, deep within the human, individually and socially, at the psychic level.⁵⁴ Cosmology as worldview functions at this level, so a conversion in our cosmology is critical.

Thomas Berry's Response

Berry's work invites its own category of response to the new cosmology. Berry's functional cosmology operates at the level of worldview. It is the reality of the universe as cosmogenesis, in its physical and psychic presentations, and the recognition that the ecological crisis represents distorted human-earth relations that come out of dominant cultural cosmologies, that shape and inform Berry's functional cosmology. Such a functional cosmology can act on physical, spiritual and emotional levels to create a new vision of human-Earth relations. Human beings need the understanding of the cosmos as cosmogenesis, Berry insists. It will give us the imagination and strength to make the radical changes necessary to heal human-Earth relations and begin reparations on the damage humans have wrought.

It should be noted that Berry's functional cosmology is not meant to replace existing creation stories. Rather, such a cosmology provides a more comprehensive

⁵³ Berry, *Great Work*, 60.

⁵⁴ *Ibid.*

framework for understanding the deeper meaning of the original narratives, and their role in the development of the consciousness and religious lives of human communities.

Berry's functional cosmology offers a common creation story that diverse and sometimes conflicting religious traditions can turn to in the great effort to heal the natural world and our relations with it.⁵⁵

Conclusion

In the first part of this chapter, I have demonstrated that cosmogenesis is a complex process in which all that exists in the universe is embedded. Cosmogenesis is the way beings, including humans, are, rather than what we are in. For Berry, the best way to understand cosmogenesis, in both its material and spiritual dimensions, is as narrative. In the second part of this chapter, I described the emergence of a new cosmology within religion that is a response to the discoveries of the emergent universe. I described how cosmology as worldview can be interpreted, and located Berry's understanding of cosmogenesis within that position. Because the focus of concern is on the ecological

⁵⁵ It should also be clear that Berry is not advocating a new 'metareligion' that will supersede current traditions. Rather, he is calling for fuller expression within diverse traditions in the context of cosmogenesis. The influence of Berry's study of various world religions is evident in his scholarship, including his tremendous sensitivity to their unique and complete contributions. He is careful to assert that all religions "were substantially complete in their earlier expression" (Thomas Berry, "The Cosmology of Religions," in *Pluralism and Oppression: Theology in World Perspective*, ed. Paul F. Knitter, R. Panikkar et al. (Lanham, MD: University Press of America, 1990), 110), even as they now need to incorporate the discoveries of the emergent universe. We need the diversity of religious traditions: "We are now living in the macrophase period of development of most religious traditions, the period of extensive influence without formal initiation. When the traditions are seen in their relations to each other, the full tapestry of the revelatory experience can be observed. In the fabric of the whole, the numinous quality of the universe reveals itself most fully." ("Cosmology," 111)

pandemic, I also provided a brief summary of how that crisis can be understood as one of cosmology.

In the next chapter, I explore more fully how cosmogenesis informs Berry's functional cosmology and its vision for renewed human-Earth relations and ecological healing.

CHAPTER TWO

THE ROLE OF COSMOGENESIS IN A FUNCTIONAL COSMOLOGY

It is all a question of story. We are in trouble just now because we do not have a good story. We are in between stories. The old story, the account of how the world came to be and how we fit into it, is no longer effective. Yet we have not learned the new story.

Thomas Berry, *The Dream of the Earth*

In this chapter I explore more deeply how cosmogenesis informs Thomas Berry's functional cosmology. According to him, a functional cosmology tells the story of the emergent universe in both its physical-material reality and in its psychic-spiritual dimensions that have existed from the primordial origin moment.¹ It is a worldview infused with an awareness of the cosmos as cosmogenesis. Berry's position is shaped by his understanding of how human communities function through cultural narrative, archetypal symbols, myth, story, and historical consciousness, and by the role that dysfunctional cosmologies play in the ecological crisis.

How Human Communities Function

Berry's conviction that such a functional cosmology has the power to give humans

¹ Berry, *Dream of the Earth*, 120.

a renewed sense of place in the universe and inspire us to heal our relationships with one another and the other than human world² is located in his understanding of how human communities function. Berry's work is shaped by his ideas on cultural narrative, archetypal symbol, myth, story, historical consciousness, and cosmology. I will describe the influence of each of these areas on his vision of a functional cosmology, before moving on to discuss more specifically the content of that vision in relation to cosmogenesis.

Cultural Narrative

Berry's thinking is influenced by the idea that human communities function within cultural narratives; stories that offer the larger context in which personal and communal identities and experiences are understood.³ His ideas about cultural narratives are formed by his study and teaching on the great world religions, as well as the work of Mircea Eliade and Carl Jung. Through his studies of the religions of China and India, North American Native religions and his own Christian tradition, Berry discovered that religions offer cultural narratives that orient people within themselves and the world.

² This phrasing is deliberate. It is intended to respect the subjectivity of other beings and to avoid a perspective that suggests that the human is normative. "Non-human" sometimes has this connotation. Another phrasing that is used is "more than human." See for example David Abram, *The Spell of the Sensuous: Perception and Language in a More-Than-Human World* (New York: Pantheon Books, 1996).

³ Heather Eaton, "Feminist or Functional Cosmology? Ecofeminist Musings on Thomas Berry's Functional Cosmology," *Ecotheology* 5 and 6 (1998-9), 77.

Religions in many ways are the narratives of cultures located in time and place.⁴ Even in the growth of scientific secular cultures around the world, people are informed and motivated by cultural narratives, of both creation and salvation. Whether the world was created by a divine hand or physical processes devoid of supernatural power, and whether humans will be saved from the exigencies of life in a transhistorical otherworld or by the powers of technology, such narratives continue to inform human existence.

Through his studies of world religions, Berry became aware that the world was in transition, with a global culture emerging but without a sufficient global narrative.⁵ While the individual religious traditions offer culturally specific narratives, the world is in need of a larger narrative, a meta-narrative to assist humans in the face of the ecological crisis, as well as increasing multi-cultural and multi-religious realities. Berry insists that in this time of ecological ruin and human alienation from each other and all that is not human, this is essential:

We need something that will supply in our times what was supplied formerly by our traditional religious story. If we are to achieve this purpose, we must begin where everything begins in human affairs – with the basic story, our narrative of how things came to be, how they came to be as they are, and how the future can be given some satisfactory direction.⁶

⁴ Eaton, "Critical Inquiry," 64.

⁵ Ibid.

⁶ Berry, *Dream of the Earth*, 124.

Archetypal Symbol

Through the work of Jung, Berry discovered that cultural narratives contain archetypal symbols that emerge from the psychic centres of the human:

The more profound aspects of human awareness come from a depth of our being to which even we ourselves have only limited access in the interior sensitivity of our feeling lives. We only know this depth from the symbols that emerge in our dreams or which arise spontaneously in our consciousness.⁷

When a particular culture believes that the material world contains aspects of the sacred, symbols representing such numinous principles manifest in the narratives the cultures tell themselves. When the physical cosmos is considered devoid of the sacred, as it is in larger cultural currents today, the possibility of the appearance of sacred energies occurring in the narratives of the people is limited. Yet such symbols can be retrieved, Berry believes, by returning to the source of such psychic impresses, the emergent universe particularly as it is manifest in the natural processes of the Earth.

Myth

Berry believes that the symbol systems that emerge from human consciousness and the myths that form around them function as carriers of truth. He is influenced in this position not only by Jung and Eliade in this regard, but also by Giambattista Vico (1668-1774), cultural historian and the subject of Berry's dissertation.⁸ All four scholars point to

⁷ Thomas Berry, "Religious Studies and the Global Human Community," *Riverdale Papers I-IX* (Riverdale, NY: Riverdale Centre for Religious Research, 1970-?).

⁸ Thomas Berry, *The Historical Theory of Giambattista Vico* (Washington: University of America Press,

the functioning myths traditional peoples maintain out of their relationships with the world around them. Berry argues that we need to return to the studying of such myths, for the truth that they hold about human relationships with the universe in the past and in traditional cultures in the present, and what they can teach the rest of the human community about restoring human-Earth relations.

Myth for Berry is an essentially positive tool, despite its negative impression in the modern world. Anne Marie Dalton notes this in her work on Berry, and continues:

In Berry's usage, then, myth was distinguished by its origin in the numinous dimension of the universe, its apprehension in the human psyche and its function as existential meaning-giver and model for human activity.⁹

Given this definition it is easier to understand what Berry means when he and Swimme refer to cosmogenesis as mythic in form.¹⁰ It arises out of the deep mysteries of the universe, imprints itself within our bodies and consciousness, and when understood appropriately, serves as a framework for all human endeavours.

Story

Story, one of the most common words used in Berry's work to describe a way of understanding the scientific insights of the emergent universe, is the time-bound form of

1949).

⁹ Dalton, *Theology for the Earth*, 109-110.

¹⁰ Swimme and Berry, *Universe Story*, 229.

myth. Whereas myth has a timeless quality to it,¹¹ story is historically specific. Stories contain subjects; when the empirical details of the universe and its diverse aspects are recounted as story, the subjectivity of the entire universe and its components becomes apparent. As well, the diverse insights coming from physics, astronomy, geology, chemistry, and other physical sciences come together in a seamless whole when told in story form. The deeper meaning of the universe can be accessed through story; we are given a new, common creation story. “Our scientific understanding of the universe, when recounted as story, takes on the role formerly fulfilled by the mythic stories of creation.”¹² The emphasis for Berry is on the mythic nature of cultural narrative, and the particular story form such a narrative can take today in light of the ecological crisis and the emergent universe.

Historical Consciousness

A concept that foregrounds Berry’s work on functional cosmology is the idea of historical consciousness, learned in most part from Vico. Vico sought a unifying framework within which history could be understood in light of stages of human consciousness. He believed that knowledge should be considered as a whole; he “resisted the emergence of clefts among science, philosophy, anthropology and religion.”¹³ Vico

¹¹ Dalton, *Theology for the Earth*, 110.

¹² Berry, *Dream of the Earth*, 15.

¹³ Eaton, “Critical Inquiry,” 57.

was responding to the confusion and decline in society he was witnessing in his time.

Berry's understanding of historical consciousness has been influenced by Vico in two ways. The first is in the realm of methodology; Berry agreed with the way Vico delineated history into specific ages, and with his method of characterizing them "in terms of decline followed by psychic change."¹⁴ They varied in their specific delineations, but the approach is the same. Berry identified four main eras of human history: the tribal-shamanic, the religious-cultural, the scientific-technological, and the emerging ecological era.¹⁵

It is this understanding of historical consciousness and human history that has allowed Berry to recognize that we have come to the end of an era and are poised at the beginning of a new one. The Cenozoic period, which began with the extinction of the dinosaurs sixty-five million years ago, is coming to a close. We are moving into the ecological or Ecozoic era, where we will enter into mutually enhancing relationships with the rest of the natural world, or destroy the vast biodiversity existing across the planet:

Presently we are entering another historical period, one that might be designated as the ecological age. I use the term *ecological* in its primary meaning as the relation of an organism to its environment, but also as an indication of the interdependence of all the living and nonliving systems of the earth. This vision of a planet integral with itself throughout its spatial extent and its evolutionary sequence is of primary importance if we are to have the psychic power to undergo

¹⁴ Dalton, *A Theology of the Earth*, 18.

¹⁵ Ibid.

the psychic and social transformations that are being demanded of us.¹⁶

Hence the need at this time is for a functional cosmology that can assist us in making the changes needed, and shifting our consciousness to a level unheard of since tribal-shamanic times. The magnitude of such a shift must not be underestimated. We have come to the end of the entire religious-civilizational order as we have known it,¹⁷ and are making changes to our planet of a geobiological order normally rendered in millions of years.¹⁸

Cosmology

As discussed in the previous chapter, the story of the universe is a cosmology based on an ancient understanding that rescues the meaning of the universe from a purely physical definition. This new cosmology accepts the “integral reality” of the universe’s physical and spiritual aspects,¹⁹ and considers the place of the human within the larger cosmos.

Even for individuals and communities that accept a larger understanding of cosmology as being the realm of questions about the human in relation to the universe, not all cosmologies are equal. They do not all lead to the same conclusions as do the

¹⁶ Berry, *Dream of the Earth*, 41-2. In this text he refers to the Ecological era; in his later book *The Great Work*, he has termed it Ecozoic (Berry, *Great Work*, 8).

¹⁷ Berry, “Cosmology of Religions,” 101.

¹⁸ Berry, *Dream of the Earth*, xiii.

¹⁹ *Ibid.*, 90.

cosmology of Berry, Brian Swimme and others, as outlined in Chapter One. Cosmology as Berry uses it is meant to assist people in finding their place in the larger scheme in a manner that enhances rather than destroys the life systems of the Earth:

Cosmology aims at articulating the story of the universe so that humans can enter fruitfully into the web of relationships within the universe.²⁰

It is this form of cosmology that is to be functional. There are however dysfunctional cosmologies presently active, that have contributed to the ecological crisis. In order to demonstrate the necessity of a cosmology that is truly functional within the life systems of the Earth, it is useful to distinguish those that are destructive.

Dysfunctional Cosmologies

Berry's functional cosmology is in part a response rooted in his firm conviction that the reigning cosmologies of the day, most notably in Western society, are dysfunctional. They are rooted in a radical estrangement of human beings from the rest of the natural world, with the subjugation of all that is not human considered a right and obligation. The most significant consequence of such dysfunctional cosmologies has been the ecological crisis.²¹ Current attempts to simply utilize 'natural resources' more wisely

²⁰ Swimme and Berry, *Universe Story*, 23.

²¹ Ecofeminist scholars have noted that these dysfunctional cosmologies have also led to the subjugation of various human groups; women, people of colour, the poor, and others. These oppressions and the exploitation of the natural world are rooted in worldviews based on hierarchies of power and worth. For further information see Heather Eaton, *Introducing Ecofeminist Theologies* (London: T & T Clark International, 2005); Rosemary Radford Ruether, *Gaia and God*, and idem, ed. and with introduction, *Women Healing Earth: Third World Women on Ecology, Feminism, and Religion* (Maryknoll, NY: Orbis Books, 1996).

for the benefit of humans, without questioning human relations to the other than human world, do not address the depth of the problem. Berry likens the problem to an addiction, and notes that in many cases the ecological devastation is irreversible. He also states:

A healing is often available and new life can sometimes be evoked, but this cannot be without an intensity of concern and sustained vigor of action such as that which brought about the damage in the first place.²²

Cultural Pathology

Such dysfunctional cosmologies are so ingrained in human consciousness at present that they can be considered pathological. Berry uses the term *cultural pathology* to describe the grip the technological worldview has over human consciousness today.²³ It is so ingrained in us that we cannot imagine another way of thinking or viewing the world. Such cultural pathology is the ground upon which modernity, particularly in the Enlightenment tradition and beyond, has been based.²⁴ The industrial, technologically-

²² Thomas Berry, *Great Work*, 60.

²³ Berry, *Dream of the Earth*, 205.

²⁴ Tu Weiming discusses this in his essay, "Beyond the Enlightenment Mentality." He says, "modernization, as rationalization, is Enlightenment mentality to the core." (Tu Weiming, "Beyond the Enlightenment Mentality," in *Worldviews and Ecology*, ed. Mary Evelyn Tucker and John Grim [Lewisburg: Bucknell University Press, 1993], 22) The Enlightenment mentality, Weiming continues, while having qualities that are indispensable today such as equality and human rights, contains certain ambiguities, where "progress means inequality, reason means self-interest, and individualism means greed." (Ibid., 24) The Enlightenment mentality then has led to at least some of the ideological, psychological and cultural roots of the ecological crisis. Weiming offers a complex analysis in this essay that notes we cannot merely throw away the results and gifts of the Enlightenment mentality; we are still embedded thoroughly in its continuing history. Rather, what we are required to do, similar to what Berry calls for, is turn to the spiritual resources of non-Western and indigenous lifeways, to assist in the transformation of Enlightenment worldviews.

driven world has been created out of a powerful mythic narrative that is nearly impossible to recognize. It has been inspired “by a distorted dream experience, perhaps by the most powerful dream that has ever taken possession of human imagination.”²⁵

This pathology is sustained at every level of social organization in modern society; economics, education, law, religion, medicine. It has led to a level of ecological devastation incomparable to any other human-derived crisis on the Earth. Such devastation is both symptom and consequence of a Western cultural disorientation deep in the individual and collective psyches of human communities.

An Alternative Vision

By challenging the reigning pathologies, Berry is very specific about what a functional cosmology could be in today’s era. It is a mythic narrative that tells the story of the emergent universe with the twin dimensions of physical and psychic energies present from its very beginning in time and space. Anything less than this, any story that tells the tale of the physical universe without its spiritual aspect, talks of the sacred quality of the world devoid of its scientific details, or in any way neglects to make the human integral with the universe process, will be insufficient to create the vision or summon the psychic energies needed to shift human consciousness to the level necessary to restore mutually

²⁵ Berry, *Dream of the Earth*, 205.

supportive human-Earth relations. In addition, any cosmology that does not grapple with the current realities of the ecological crisis and its long-term and in many cases irreversible damage, is equally inoperable.

Cosmogenesis in a Functional Cosmology

The insights into cosmogenesis form the content of Berry's vision. In his opinion, cosmogenesis provides the basis of the story needed for reorienting the human in the world:

This sequence of irreversible transformations is now the central fact of our existence. We and everything around us came into being within this sequence of transformations. Our personal story is intelligible only through this larger story since everything that has happened in this more comprehensive story has been needed for us to be as we are.²⁶

There are many features of cosmogenesis that inform Berry's cosmology.²⁷ I have identified five aspects that have revolutionary implications for the role of human beings in renewed human-Earth relations.

(1) The Primordial and Continuing Psychic-Spiritual Dimension of Cosmogenesis

As I stated earlier, the emphasis in Berry's functional cosmology is on completing

²⁶ Berry, "Christianity in an Emergent Universe," in *Light Burdens, Heavy Blessings: Challenges of Church and Culture in the Post Vatican II Era: Essays in Honor of Margaret R. Brennan*, ed. Mary Heather MacKinnon, Moni McIntyre, and Mary Ellen Sheehan (Quincy, IL: Franciscan Press, 2000), 363.

²⁷ In her dissertation, Eaton summarizes the core concepts of Berry's functional cosmology in thirteen key points. While cosmogenesis is listed as one of them, an examination of the list shows how the realization that universe is a time-bound irreversible process is tied into virtually all of the features. See Eaton, "Critical Inquiry," 76.

the mythic narrative started by new physics on the nature of the universe. Berry insists that we need to remain solidly grounded in the wondrous details about the physical reality of the emergent universe, in which human beings figure differently than we had previously thought, and simultaneously consider the psychic reality of the universe. It is an understanding of the universe's spiritual dimensions that is necessary now:

The greatest single need at present is the completion of the story, as told in its physical dimensions by science, by the more integral account that includes the numinous and consciousness dimensions of the emergent universe from its primordial moment. Once that is done, a meaningful universe, a functional cosmology, is available as a foundation for the total range of human activities in the ecological age.²⁸

Berry returns to the psychic-spiritual aspect of the universe in a unique manner. As I noted in the previous chapter, theologians and scientists have responded in a variety of ways, most focussing on the power *behind* the creation of the universe. Using the reality of cosmogenesis, Berry explores what the scientific details themselves tell us about the spiritual nature of reality, and how this matters in human lives and in human-Earth relations. Berry believes that the universe certainly invites human questioning into its numinous origins; such questioning must emerge out of the universe itself as the reference point.

(2) Humans are Integral with the Universe Process

A basic premise coming out of cosmogenesis is that human beings are integral

²⁸ Berry, *Dream of the Earth*, 120.

with the entire process. For Berry, this is evidence enough of the spiritual dimension of cosmogenesis, since spirituality is a core aspect of being human.²⁹ Our discovery that all that exists is part of the universe itself moving in time toward ever increasing complexity places humans firmly within that process. As beings in the universe with the capacity for self-reflective consciousness, we activate a deep dimension of the universe.³⁰ Everything in the universe exists in response to all that is around it; this means that humans are who we are because of the world in which we live, particularly this magnificent Earth. If we disappeared, a vital piece of the universe would be gone forever, an aspect that could not be articulated in any other way or through any other being in the universe. The same is also true of every other being:

In its every aspect the human is a participatory reality. We are members of the great universe community. We participate in its life. We are nourished by this community, we are instructed by this community, we are healed by this community. In and through this community we enter into communion with that numinous mystery whence all things depend for their existence and their activity.³¹

(3) Cosmogenesis is Characterized by Communion, Differentiation and Subjectivity

I briefly described the qualities of communion, differentiation and subjectivity that are foundational of the universe and Earth processes, in the previous chapter. In a

²⁹ Berry, "Christianity's Role in the Earth Project," in *Christianity and Ecology: Seeking the Well-Being of Earth and Humans*, ed. Hessel, Dieter T. and Rosemary Radford Ruether (Cambridge, MA: Harvard University Center for the Study of World Religions: Distributed by Harvard University Press, 2000), 131.

³⁰ Berry, *Dream of the Earth*, 195.

³¹ Berry, "Cosmology of Religions," 100.

functional cosmology, they serve to remind us that they are qualities all human beings share, with each other and with the rest of the universe, particularly in its Earth manifestation. They also provide an orientation to values we can develop in our efforts to enhance our relationships with the natural world. Our pathological sense of alienation is challenged by this threefold characterization, for we are forced to recognize that humans are fundamentally in communion with the rest of the phenomenal order. We are all connected, through our participation in cosmogenesis. The sense of communion is more than a metaphor for relationships. Communion exists in the law of gravitation for example, and within human relationships. Through communion, we become intimately present to other humans and to the other than human world.³² “The universality and intensity of this communion indicate its immense value.”³³

Subjectivity holds as much significance for humans in a functional cosmology. The understanding of subjectivity in cosmogenesis can be challenging, because we are accustomed to considering it in distinctively human terms.³⁴ However, subjectivity in cosmogenesis refers to the interiority of every thing in the universe; it bespeaks a special mystery lodged within all forms within the universe process. Subjectivity in this sense has tremendous value in a functional cosmology because it allows humans to recognize the

³² Berry, *Dream of the Earth*, 106.

³³ *Ibid.*, 107.

³⁴ Dalton, *Theology for the Earth*, 129.

natural world not as a collection of objects, but as a “communion of subjects.”³⁵

Finally, differentiation holds particular merit in a functional cosmology. The universe is diverse, in its human subjects and other beings in the natural world. Some human attempts to create a homogeneous world across the planet deny this fundamental aspect of cosmogenesis. When we lose differentiation through species extinction, ecosystem destruction, cultural eradication, and other ways, we lose aspects of the universe that will never be retrieved.

Reclaiming these three interrelated values could have a profound effect on the way humans perceive themselves in relation to the world around them, and how they act in accordance with that perception.

(4) Everything in the Universe is Genetically Related

Linked with the characteristic of communion in cosmogenesis, everything in the universe is genetically related to everything else by virtue of our common descent from the same elements dispersed throughout the universe in its birth moment. We are particularly indebted to the supernova explosions of the first stars, which brought forth the elements that eventually formed the planet Earth.³⁶ Cosmogenesis becomes the primary family tree for each one of us:

The entire universe is genetically related. Every individual being is cousin to

³⁵ Swimme and Berry, *Universe Story*, 243.

³⁶ Berry, “Christianity in an Emergent Universe,” 368; Swimme and Berry, *Universe Story*, 49.

every other being in the universe since everything emerges by an unbroken sequence from the same physical-spiritual source.³⁷

This holds not only for our relationship with other living beings, such as birds, animals, fish, insects, and bacteria, but for our relationship to the non-living aspects of the world in which we are imbedded. The wind, rocks, water, and stars in the heavens have equally emerged from the same raw materials as human beings.

Berry uses language that is both literal and evocative in its power to convey new possibilities for human-Earth relations in a functional cosmology. His employment of the words cousin, family, community, and bonded refer to our genetic relatedness with all within cosmogenesis, to be sure. They also evoke a reordering of human relations with the rest of the natural world normally associated with our immediate human families. This distinct feature of cosmogenesis in Berry's functional cosmology challenges quite profoundly the notion of human disconnection from the rest of the community of beings on Earth.

(5) The Universe is the Primary Revelatory Experience

Cosmogenesis teaches us many things, Berry insists, one of which is that the universe, especially in our immediate experience of the natural world, is our primary revelatory experience.³⁸ The sequential process itself is teaching us something new:

³⁷ Berry, "Cosmology of Religions," 108.

³⁸ Berry, *Great Work*, 75.

unfolding, is providing us with a new revelatory experience of whatever is the origin from which it emerges.³⁹

There are several ways this can be understood. First, through cosmogenesis we learn that, as far as we know, nothing exists beyond the universe; “The universe is the only self-referent mode of being in the phenomenal order, the only text without a context.”⁴⁰ All other beings in the universe, including humans, are universe-referent; we can source beyond ourselves in the cosmogenetic process to the whole of that process, the universe. Our context is the universe itself. When humans question the mysterious origins of ourselves and the world in which we live, we can refer back to the universe, and to the numinous source that brought it into being. Therefore, our experience of the universe, whether through contemplation of the stars, encounters with the elements and wild creatures of the planet, discoveries of the mysterious processes of our own bodies, or through the historical development of our human communities, becomes the primary revelatory experience. Primary in this case means first, originary, foundational to all of our secondary experiences of revelation.

There is yet another way to understand it. Religious expression is an aspect of human consciousness. As I discussed in the description of cosmogenesis, human consciousness is an aspect of the universe itself evolving and growing in every greater complexity. Since human consciousness is an aspect of the universe itself, so is religious

³⁹ Ibid., 78.

⁴⁰ Berry, “Christianity in an Emergent Universe,” 366.

expression. Berry considers human religions to be a way that we participate in the religious expression of the universe.⁴¹

Since the human in its religious capacities emerges out of this cosmological process, the universe itself can be considered as the primary bearer of religious experience.⁴²

There is a third, related way to understand the assertion that the universe is the primary revelation. Berry discusses it in relation to the role of Christianity in restoring human-Earth relations. He points out that absolutely everything in Christian belief comes out of and depends upon the world around us; our moral teachings, sacraments, forms and patterns of liturgy, and spiritualities.⁴³ They are our responses to experiences of the divine grounded in this world. Therefore, the variety of beliefs and expressions of the Christian tradition are secondary; it is the concrete, material world that gave rise to them that is the primary revelatory experience.

Summary: Exploring cosmogenesis within Berry's functional cosmology in this manner highlights a central point: a functional cosmology of the universe, in service to the ecological integrity of the planet is, fundamentally, the story of *ourselves*, as well as the story of the entire community of beings:

The universe is the larger self of each person since the entire sequence of events

⁴¹ Berry, "Cosmology of Religions," 99.

⁴² Berry, "Cosmology of Religions," 103.

⁴³ Berry, "Christianity's Role in the Earth Project," 133.

that has transpired since the beginning of the universe has been required to establish each of us in the precise structure of our own being and in the larger community context in which we function.⁴⁴

The story of cosmogenesis, told within this functional cosmology, is our personal story, individually and collectively. It is an intimate story. The reality that I, as a human being, am the universe reflecting upon itself is an intimate reality. The fact, known through the discovery of cosmogenesis, that I am participating directly in the universe process through my being human, is as intimate as the story of how I came to be born into my particular family, as intimate as the various details of my journey to adulthood.

Conclusion

What I have demonstrated in this chapter is that how cosmogenesis operates in Berry's cosmology is informed by his understanding of the nature of human communities. I then identified five key aspects of cosmogenesis that shape Berry's vision. It is important to remember that cosmogenesis is interpreted, through its scientific details, in its mythic dimensions in story form.

The challenge then becomes, as Berry suggests, how to tell this story in such a way that it can function as a cosmology appropriate for healing human-Earth relations and the planet itself:

Both a competence and a willingness to engage in the immense effort needed to tell the story is what is now needed, especially if this story is to become what it

⁴⁴ Berry, "Cosmology of Religions," 104.

should be: the comprehensive context of our human understanding of ourselves.⁴⁵

Religions have an essential role to play in telling the story of the emergent universe. In the next chapter, I investigate this role in relation to cosmogenesis.

⁴⁵ Swimme and Berry, *Universe Story*, 237.

CHAPTER THREE

THE ROLE OF RELIGION IN A FUNCTIONAL COSMOLOGY

We might even consider that the emergent universe, in the sequence of its unfolding, is providing us with a new revelatory experience of whatever is the origin from which it emerges.

Thomas Berry, *The Great Work*

There are many different ways that religious traditions can engage in the effort to heal the ecological crisis. In this chapter, I am interested in Thomas Berry's reflections on how religions can engage cosmogenesis and operate within a functional cosmology. He has been directly concerned about the role of religions in learning about cosmogenesis, transforming their traditions within a functional cosmology, and working toward restoring human-Earth relations and Earth healing from ecological devastation. He has written on the damaging part Western religious and cultural traditions have played in the ecological crisis.¹ He has also written on how a religion such as Christianity can be transformed by the insights of the universe story and become an active agent in moving human

¹ See Berry, "Christianity's Role in the Earth Project," and *Dream of the Earth*.

communities into the Ecozoic era.²

This chapter is concerned with the relationship of the Christian religious tradition to the natural world, theological responses to the problem of the ecological pandemic, and how it can transform itself within a functional cosmology in light of cosmogenesis. I begin with a brief overview of historical and present limitations of Christianity in relating to the natural world and responding adequately to the ecological crisis, and identify five tasks that a religion such as Christianity can undertake in order to operate within a functional cosmology and take appropriate action to heal the ecological devastation of the planet. I then move to an exploration of four categories of Christian response to the ecological crisis. Finally, I examine the work of four theologians who operate within a functional cosmology such as Berry advocates, and offer appropriate theological responses to the pandemic.

Limitations of Christianity Regarding the Natural World and the Ecological Crisis

If the discovery of the emergent universe itself is not sufficient to require a radical rethinking of religion, the context of the ecological crisis creates an urgent need for the various religious traditions to find ways to respond appropriately and effectively to the needs of the entire Earth community, as well as human beings in this time of massive change. As Christianity exists now, it is ineffective in coping adequately with the realities

² See Berry, "Christianity in the Emergent Universe;" *Great Work*, and Thomas Berry with Thomas Clarke, *Befriending the Earth: A Theology of Reconciliation Between Humans and the Earth*, edited by Stephen Dunn and Anne Lonergan (Mystic, CT: Twenty-Third Publications, 1991).

of ecological devastation. There are several reasons for this. One is that the world religions including Christianity emerged in a spatial orientation toward the universe. In the biblical religions there was an awareness of its cyclical modes of being, through the seasons, but the universe was perceived as previously established and participating “in the historical process in only a marginal manner.”³ At the time the major religious traditions came into being, the knowledge of the universe as emergent simply was not available. Thus liturgies and scriptures, practices and beliefs, were shaped around a spatial relationship to the rest of the world.

Another reason the Christian religious tradition has been ineffective in dealing with the destruction of the natural world has been its ambivalent attitudes toward the natural world itself. Christianity lost its “intimacy with the natural world in three phases,” Berry asserts.⁴ The first was the rise of a radical anthropocentrism through the influence of Greek humanism on early Christian spirituality. The second was the Black Death in the fourteenth century, which wiped out a third of Europe’s population within three years. Because people had no knowledge of how disease was spread in that time, the material world seemed to be the site of evil, for having caused such destruction. This led to a great need for humans to disengage themselves from the material world as much as possible.⁵

³ Berry, “Cosmology of Religions,” 102.

⁴ Berry, “Christianity’s Role in the Earth Project,” 128.

⁵ *Ibid.*, 129.

The third phase

occurred at the end of the nineteenth century when we abandoned our role in an ever-renewing organic agricultural economy in favour of an industrial nonrenewing extractive economy. This was the decisive event that moved the entire scientific and technological might of the modern world into a merciless program of disruption of the organic functioning of the planet. ...The planet became an object of use.⁶

This last phase has been perhaps the most damning for the life systems of the planet.

When this shift is combined with the power of current economic systems to control the industrial programs around the world, the effects are staggering.

Related to these three key moments in the history of Christianity, there are according to Berry certain orientations within the tradition that contributes to the denying of the sacred reality of the universe and the degradation of the Earth's natural processes. They are the emphasis on a "transcendent personal monotheistic concept of deity;"⁷ the priority of the redemption processes over those of creation; the duality of human spiritual nature over and against our physical reality; and the belief in a religious end-time in which the human condition would, by divine intervention, be trounced.⁸ In addition, Berry challenges, we have over-emphasized verbal revelation to the neglect of the manifestation of the divine in the natural world. In challenging this, Berry gives insight into how the

⁶ Ibid., 130.

⁷ Berry, "Economics: Its Effect on the Life Systems of the World," in *Thomas Berry and the New Cosmology*, ed. Anne Lonergan and Caroline Richards (Mystic, CT: Twenty-Third Publications, 1988, c1987.), 15.

⁸ Ibid., 16.

universe is primary revelation, as I discussed in the last chapter:

In this setting it can easily be seen that the universe is the primary self manifestation of the divine, our primary revelatory experience. Verbal revelation can never be primary revelation. As soon as divine communication enters into human language it takes upon itself the peculiarities of the language, of the social structures, of the historical moment. Understanding the message in this context is too difficult. Our primary experience is more immediate with our daily experience, as anyone could testify who has reflected on their experience of the stars in the heavens or the wonders of earth... The impress of the divine is everywhere.⁹

The consequences of such limiting orientations within Christianity must not be understated. Berry has identified the West as “the most dangerous force on the planet” ecologically.¹⁰ While some people may argue that it is the Western economic systems that are causing the most damage rather than religious systems, Berry addresses the distortion in worldview that is at the heart of the ecological crisis:

If the economy is more immediately the cause for disruption of the natural world, the ultimate sources for this mode of economic activity may be found in the religious-cultural context from which our present economy emerged.¹¹

That religious-cultural context has been primarily shaped by Christianity.

⁹ Berry, “Christianity in an Emergent Universe,” 366. It can also be said that how we interpret the universe as primary revelatory experience is also conditioned by language, culture, social and historical location. However, *what* we experience comes at us directly, first-hand if you will. Only then is it read through our particular lenses. When we read accounts of verbal revelation, we are reading second- or third-hand interpretations, that then become interpreted further.

¹⁰ Berry and Clarke, 118.

¹¹ Berry, *Dream of the Earth*, 80. It should be noted here, and I believe it is clear in the close reading of Berry I am offering in thesis, that while Berry makes a harsh indictment of Western religious traditions regarding the ecological crisis in his work, he is not subscribing to the blanket blame placed on Christianity by Lynn White Jr. in his famous essay, “The Historical Roots of our Ecologic Crisis.” (*Science* 155[3767], 10 March 1967).

Despite such historical and continuing challenges within the worldviews of Christian tradition, Berry maintains that Christianity, as well as the other world religions, can play a significant role in reversing attitudes toward the natural world and beginning the process of healing the ecological crisis. Indeed, we need them in this process, but in their current forms they are inadequate to the task.¹² What is needed is a renewed cosmology grounded in cosmogenesis.

The Role of Religion in a Functional Cosmology

Religion scholars Mary Evelyn Tucker and John Grim, who are actively involved in the emerging dialogues between world religions and ecology, provide this definition of religion:

Religion...refers to those cosmological stories, symbol systems, ritual practices, ethical norms, historical processes, and institutional structures that transmit a view of the human as embedded in a world of meaning and responsibility, transformation and celebration.¹³

This is a useful definition because it serves to illustrate the role that religion has to play in Berry's functional cosmology. If Christianity is to be effective in restoring human-Earth relations and repairing the destruction caused to the ecosystems of the planet, it must transform its cosmologies, symbols, rituals, ethics, and institutions in light of the insights of cosmogenesis and the role of the human within it. This is a workable though

¹² Berry, *Dream of the Earth*, 87.

¹³ Mary Evelyn Tucker and John Grim, "Introduction: The Emerging Alliance of World Religions and Ecology," in *Dædalus* 130, no. 4 (Fall 2001), 14.

demanding job. I have identified five tasks the Christian tradition can undertake in order to operate out of a functional cosmology that recognizes the psychic-spiritual and physical-material dimensions of the emergent universe, leads to renewed relationships between human beings and the other than human world, and fosters ecological healing.

1) Study and Transmit the Story of the Emergent Universe

The Christian tradition needs to learn the details of the continuing history of cosmogenesis in its concrete and specific details, as it is being told to us by new physics. There is much to be learned if the story of the universe is approached not from the position of established religious doctrines, but from the perspective of openness to learning and insight from this distinct but related source of wisdom. Before a faith such as Christianity can begin to interpret the discoveries of the emergent universe in light of religious experience and tradition, it must fully grasp the scientific details as they are now understood.

Once knowledge of the universe as such has been studied, Christian ministers and teachers can begin to tell the universe story to their congregations. In Berry's estimation, this is most effective if it is done within the context of the universe itself, rather than the confines of dogma and doctrine. This is an inherently theological task, even though as such it may not be immediately recognizable:

When we explain the universe as we now know it, in its originating moments and its long sequence of transformations, we are explaining the manner in which the

Creator has brought the universe into being.¹⁴

2) *Recognize the Universe as Primary Revelation*

The second task of Christianity within a functional cosmology that acknowledges the psychic-spiritual and physical-material dimensions of the universe is to recognize the universe as the primary sacred reality, and as primary revelatory experience, as I discussed in Chapter Two. A functional cosmology begins where all of life originates; with the story of the universe as emergent, with cosmogenesis:

Both education and religion need to ground themselves within the story of the universe as we now know it through our empirical ways of knowing. Within this functional cosmology we can overcome our alienation and begin the renewal of life on a sustainable basis. This story is a numinous revelatory story that could evoke not only the vision but also the energies needed for bringing ourselves and the entire planet into a new order of survival.¹⁵

A tradition such as Christianity has the special role of fostering religious experience of the universe as story, experience of the numinous powers that brought the universe into emergent being thirteen billion years ago. It requires, however, a radically new religious orientation toward cosmogenesis. Within this orientation, humans can begin to recognize our co-creation in the universe process, with all other beings in the world. We will also discover that the journey of the universe as it is described is not only

¹⁴ Berry, "Christianity's Role in the Earth Project," 132.

¹⁵ Berry, *Great Work*, 71.

“the sacred journey of the universe, [it] is the personal journey of each individual.”¹⁶ This realization of our participation in creation is new; it simply was not possible to imagine within the seasonal, renewing cycles of a spatial world.

Despite the limitations I outlined above to undertaking such a task within Christianity, there are tremendous resources within the Christian tradition that can be drawn upon, such as the work of Pierre Teilhard de Chardin, discussed in relation to cosmogenesis in Chapter One. For Berry, Teilhard de Chardin is the “single most important resource”¹⁷ for Christian development in light of cosmogenesis.

3) *Celebrate Key Moments in the Story of the Universe*

For Berry and Swimme, ultimately the universe is celebration:

The emergent universe can be considered as a continued elaboration of this sequence of existence and extinction, the pressing toward expanded modes of being and ever more intimate presence of things to each other. Everything about us seems to be absorbed into a vast celebratory experience. Whatever be the more practical purposes of existence it appears that celebration is omnipresent, not simply in the individual modes of its expression but in the grandeur of the entire cosmic process.¹⁸

Therefore, the third task of Christianity within a functional cosmology is to participate in the cosmic celebration, by honouring through ritual key aspects in the history of the universe, which is after all the history of ourselves. In addition to important

¹⁶ Berry, “Cosmology of Religions,” 104.

¹⁷ Berry, “Christianity in an Emergent Universe,” 367.

¹⁸ Swimme and Berry, *Universe Story*, 264.

times in human history, religions should honour such miraculous events as the birth of the universe itself, the supernova explosions that brought the Earth into being, the mysteries of life emerging, and other significant stages within the sequence of cosmogenesis, such as photosynthesis and the emergence of flowers.¹⁹

The importance of such cosmic liturgies cannot be underestimated:

To ritualize [these moments] would provide that depth of appreciation for ourselves and for the entire creative process that is needed just now when the entire earthly process has become trivialized and we have no established way of entering into the spiritual dimension of the story that the universe is telling...²⁰

4) Move Away from Battles over Religious Truth Claims, and Toward Recognition of the Need for a Full Tapestry of Religious Expressions

For a functional cosmology to become effective and Earth healing to happen, Christian religious and cultural traditions must begin to relinquish their hegemonic positions on the world stage. They need to open to the wisdom of other religious traditions informing insights into the nature of the universe and the role of the human. Eastern religions, Indigenous traditions, as well as the insights of marginalized peoples within all religious traditions must be considered alongside the wisdom of new science.²¹

¹⁹ Berry, "Christianity in an Emergent Universe," 368.

²⁰ Berry, "Cosmology of Religions," 107.

²¹ See Berry, *Great Work*, 176-195, as well as more generally throughout his work. In the chapter "The Fourfold Wisdom" of *The Great Work*, he refers to the wisdom of women. I suggest expanding that idea to include the wisdom of other marginalized peoples as well, in part to avoid an essentializing of women's wisdom, in part to recognize that wisdom comes to us out of the particular and contextualized experiences of marginalization itself.

In the work of Berry, the awareness of this requisite comes out of his study of the history of world religions, and his understanding of how religions operate within the process of cosmogenesis itself. This task moves beyond the need for religious respect, as important as that is in today's multi-religious and multi-cultural global environment. Although there are distinct and sometimes seemingly contradictory revelatory insights within religions, all are necessary. Such diversity is part of the psychic-spiritual nature of the universe:

None of these [religious] experiences are rivals of the others. ...Each is supreme in its own order. Each is destined for universal diffusion throughout the human community. Each is needed by the others to constitute the perfection of the revelatory experience. ...When the traditions are seen in their relations to each other, the full tapestry of the revelatory experience can be observed. In the fabric of the whole, the numinous quality of the universe reveals itself most fully. The traditions are, as it were, dimensions of each other.²²

Now we are in a time, Berry says, of extensive influence of the world religions upon each other without "formal initiation,"²³ through cross-cultural exposure, geographic movements, and demographic changes around the world. For him, this is the next stage in a form of the religious consciousness of the universe itself.

In light of the insights of cosmogenesis then, the task of a religion such as Christianity is to cease being self-referencing, and begin to reinterpret itself and its gifts of revelation in light of other world religions and the nature of religious experience within

²² Berry, "Cosmology of Religions," 110-1.

²³ *Ibid.*, 111.

human communities more generally. This requires more than just interreligious dialogue; it necessitates “genuinely encounter[ing] other religious perspectives and allow[ing] ourselves and our theologies to be transformed by this process.”²⁴

No one religion holds the sufficient resources, no matter how transformed by the insights of cosmogenesis, to adequately address the problems of the ecological crisis today. By a move to an authentic religious pluralism in a functional cosmology, the particular values each religious tradition can offer to the problem of ecological degradation can be discovered.

5) Actively Work Toward the Healing of the Ecological Crisis

This final task for Christianity within a functional cosmology that takes seriously the insights of cosmogenesis is possibly the most daunting. The enormity of the challenge before us in preventing the spiritual and physical death of the planet Earth itself is unlike anything humans have faced before. As I outlined in the Introduction, humans are causing changes to the life systems of the planet that normally take millions of years of the Earth’s natural cycles to engender. This is not merely another historical transition in the lives of humans or of the earth process:

We are at the end of an entire religious-civilizational period. In virtue of our new knowledge, we are changing our most basic relations to the world about us. These changes are of a unique order of magnitude.²⁵

²⁴ Heather Eaton, “Response to Rosemary Radford Ruether,” 117.

²⁵ Berry, “Cosmology of Religions,” 101.

It is imperative that the Christian tradition deal with the enormity of the ecological crisis, in its physical details and its religious implications. It must do so in its theologies, liturgies, spiritual practices, and community activities. Its clergy and congregations need to learn the specific details of the ecological pandemic, in its local and global manifestations. It is not enough to know in general that there is a problem.

Summary: One role of Christianity is to begin the work of reinterpreting its tradition in light of the insights of cosmogenesis and contribute to the creation of a functional cosmology that can provide the vision and strength necessary to undertake the massive changes required to heal the ecological crisis.

Christian Responses to the Ecological Crisis

While there are significant limitations within the Christian tradition regarding the natural world and the ecological crisis, there has nevertheless been a range of responses from concerned Christian theologians toward the problem of ecological deterioration. They can be generally categorized into four main categories, ecological paradigms that hold differing worldviews and have different levels of efficacy in changing human attitudes toward the natural world. They are the paradigms of stewardship, ecojustice, ecofeminism, and cosmology.²⁶ I discuss each below.

²⁶ This categorization of paradigms of ecological theology is from the work of Heather Eaton. See Eaton, "This Sacred Earth."

Stewardship

One category of Christian response is that of stewardship, in which the ecological crisis is understood mainly as a physical crisis. It mirrors the first level at which ecological deterioration is a problem, discussed in the Introduction, which is that the ecological crisis is primarily material. The call is for Christians to become better custodians of the natural world for the sake of humans, that we manage our natural resources better so that they last longer for human use and benefit. Larry Rasmussen points out that stewardship language is common in sustainable development discussions at the United Nations and among NGOs today.²⁷ Holmes Rolston III writes within a stewardship framework,²⁸ as does Calvin DeWitt, within an evangelical perspective.²⁹

This model fails to consider how aspects of the ecological crisis impact other parts of ecosystems beyond human beings. It also neglects to challenge the notion of human domination, however ‘responsible,’ over the natural world, and perpetuates the worldview that has caused the degradation in the first place. Stewardship is also ineffective as a symbol within the larger Earth and universe story, given how recently human beings have arrived on the scene.³⁰ The stewardship model is therefore limited in

²⁷ Larry L. Rasmussen, *Earth Community Earth Ethics* (Maryknoll, NY: Orbis Books, 1996), 235n18.

²⁸ See Holmes Rolston III, “Environmental Ethics: Some Challenges for Christians,” *Annual of the Society of Christian Ethics* (1993): 163-186.

²⁹ See Calvin B. DeWitt, “Creation’s Environmental Challenge to Evangelical Christianity,” in R.J. Berry, ed., *The Care of Creation: Focusing Concern and Action* (Leicester, England: Inter-Varsity Press, 2000), 60-73.

³⁰ Rasmussen, *Earth Community Earth Ethics*, 235.

its ecological efficacy, and inadequate within a functional cosmology as it has been explored by Berry.

Ecojustice

The notion of ecojustice within Christian ecological theology offers a more nuanced analysis than the stewardship model, taking into consideration a social justice analysis. “Ecojustice analyses reveal how deeply the ecological crisis is entangled with economics, globalization, and indeed much of the ‘production’ of industrialized countries.”³¹ James Nash takes an ecojustice approach in his book, *Loving Nature: Ecological Integrity and Christian Responsibility*.³² Several edited volumes present an ecojustice approach to theology, including *Theology for Earth Community: A Field Guide*, edited by Dieter T. Hessel,³³ and *Earth Habitat: Eco-Injustice and the Church's Response*, edited by Hessel and Larry Rasmussen.³⁴

This paradigm of Christian ecological theology is more effective than the stewardship model, as it considers how the ecological crisis affects human communities

³¹ Eaton, “This Sacred Earth,” 38.

³² James A. Nash, *Loving Nature: Ecological Integrity and Christian Responsibility* (Nashville: Abingdon Press in cooperation with The Churches' Center for Theology and Public Policy, Washington, DC, 1991).

³³ Dieter T. Hessel, ed., *Theology for Earth Community: A Field Guide* (Maryknoll, NY: Orbis Books, 1996).

³⁴ Dieter Hessel and Larry Rasmussen, eds., *Earth Habitat: Eco-Injustice and the Church's Response* (Minneapolis: Fortress Press, 2001). It should be pointed out that Rasmussen himself sometimes works out of a cosmological model, in the area of ethics. See Larry Rasmussen, “Cosmology and Ethics,” in *Worldviews and Ecology*, ed. Mary Evelyn Tucker and John Grim (Lewisburg: Bucknell University Press; London and Toronto: Associated University Presses, 1993): 173-80.

in diverse and unequal ways. It relates to the second level of the ecological crisis in which environmental degradation is linked with global and local economic problems. Its proponents consider such issues as environmental racism, unequal access to water, energy, clean air, and the North-South consumption gap where twenty percent of the world's population consumes eighty percent of the world's resources.

Ecojustice is an essential aspect of any analysis of the ecological crisis. However, although it is a more complex model than that of stewardship, the ecojustice paradigm fails to shift ecological concerns out of an anthropocentric position. Therefore, it too fails to function within the cosmology that Berry is advocating. It does not shift humans from a position of dominance within the community of beings on the Earth and within the context of universe history, says nothing about the sacred reality of the universe, and does not depend on a cosmological understanding of human-Earth relations.

Ecofeminism

Ecological feminism is the third paradigm in which Christian theologians are analyzing the ecological crisis and exploring theological resources in response. It deepens the investigation begun by ecojustice advocates and relates most closely to the third level of the ecological pandemic, where connections are made with the social implications of ecological damage. Ecofeminist scholars explore the interconnections between the

exploitation of the natural world and the oppression of women.³⁵ Through demonstrating the varying links between the causes of the ecological crisis and the domination of women, ecofeminist analysis has offered deft insight into the roots of the ecological pandemic that lie within religious traditions. Significant voices in ecofeminist theology include Rosemary Radford Ruether, who as early as 1975 was making the links between domination of women and exploitation of the Earth,³⁶ Ivone Gebara³⁷ and Mary Grey.³⁸

Ecofeminist theologians, in this more complex paradigm, often make the links not only between women and the ecological crisis, but with other aspects of social justice. Ecofeminist scholars writing from the South are making links with poverty and racism, and employing the methods of liberation theology in addition to ecofeminist analysis.³⁹ Others are engaging ecofeminist theology with questions concerning globalization.⁴⁰

³⁵ There is no one kind of ecofeminism; no one position on how women and nature relate. Ecofeminism is as diverse as the field of feminism itself is. The common denominator is the position that there is a relationship between the domination of women and of nature.

³⁶ Rosemary Radford Ruether, *New Woman, New Earth: Sexist Ideologies and Human Liberation* (NY: Seabury, 1975), 186-214. See also Ruether, *Gaia and God*.

³⁷ Ivone Gebara, *Longing for Running Water: Ecofeminism and Liberation* (Minneapolis, Fortress Press, 1999).

³⁸ Mary C. Grey, *Sacred Longings: The Ecological Spirit and Global Culture* (Minneapolis: Fortress Press, 2004).

³⁹ See Gebara, *Longing for Running Water*; David G. Hallman, ed., *Ecotheology: Voices from South and North* (Geneva: WCC Publications; Marknoll, NY: Orbis Books, 1994); Mary Judith Ressa, *Without a Vision, The People Perish: Reflections on Latin American Ecofeminist Theology* (Santiago, Chile: The Con-spirando Collective, 2003); Ruether, *Women Healing Earth*.

⁴⁰ Heather Eaton and Lois Ann Lorentzen, eds., *Ecofeminism and Globalization: Exploring Culture, Context, and Religion* (Lanham, MD; Toronto: Rowman & Littlefield, 2003); Grey, *Sacred Longing*; and Rosemary Radford Ruether, *Integrating Ecofeminism, Globalization, and World Religions* (Lanham, MD:

Ecofeminist theology offers the most resources to the functional cosmology advocated by Berry, because it provides a highly nuanced analysis of other causes and consequences of distorted worldviews. However, without an explicit cosmological context to undergird the ecofeminist project, it fails to operate fully as a functional cosmology in itself. Ecofeminism neglects to provide human communities with a larger cosmological framework in which to understand the constructs of oppression and liberation, nor does it locate human beings beyond our social context to our positioning within the entire community of living and non-living beings as a species.

Cosmology

The final category for ecological theology is that of cosmology, rooted in the return to cosmology discussed in Chapter One. The new cosmology emerging from dialogues between religion and science is concerned with the radical shift in our understanding of humans within the created order, and identifies the breakdown in religious and cultural narratives that lead to the ecological crisis.⁴¹ This cosmological theology is the most nuanced of the four ecological paradigms, and most capable of operating within a functional cosmology. It shifts the human within the entire community of beings, takes seriously the discoveries of the emergent universe, and allows room for

Rowman & Littlefield, 2005).

⁴¹ Eaton, "This Sacred Earth," pp. 40.

detailed social analyses of the problems plaguing human communities that relate to the ecological crisis.

Functional Cosmology and the Ecological Crisis: Four Theological Responses

A number of Christian theologians are engaging the new cosmology in light of the ecological pandemic. Sallie McFague, Heather Eaton, John Haught, and Anne Primavesi are scholars who take seriously the reality and implications of the emergent universe within their respective fields of scholarship.⁴² While not working explicitly within Berry's framework, all of them are attempting, like Berry, to take seriously the discoveries of new physics and the ecological crisis. To give some indication of the depth and variety of theology emerging from within this paradigm, I will examine below the work of these theologians, who are responding to the new cosmology and the ecological crisis in diverse and significant ways.

Sallie McFague

Sallie McFague is a feminist theologian whose emphasis has been on the metaphorical nature of religious language and different models for understanding God, human beings and the world. Her writing has developed into an ecological theology based upon the discoveries of the emergent universe as a common creation story that can be

⁴² There are other theologians who are also engaging the new cosmology, who I will not be discussing here. See for example Ian G. Barbour, *When Science Meets Religion: Enemies, Strangers or Partners?* (London: SPCK, 2000); idem, *Religion and Science: Historical and Contemporary Issues* (London, SCM Press, 1998); Leonardo Boff, *Ecology and Liberation: A New Paradigm* (Maryknoll, NY: Orbis Books, 1995); and Larry Rasmussen, *Earth Community Earth Ethics* (Maryknoll, NY: Orbis Books, 1996).

claimed by all people, regardless of religious affiliation.⁴³ From this common story she has drawn key concepts of the universe for our larger framework; its story character, the qualities of interrelatedness and subjectivity, and its public availability to all who wish to learn it.⁴⁴

For nearly twenty years, McFague has been directly concerned with the problem of the ecological crisis, as well as the complex oppressions within the human community. Working within a cosmological perspective and with a commitment to the liberative core of Christianity on behalf of the oppressed, she has written several volumes addressing various aspects of the ecological crisis. In *Models of God: Theology for an Ecological, Nuclear Age*, she begins to address models of God within the Christian tradition that can transform the oppressive aspects of the tradition into more empowering forms.⁴⁵ In *The Body of God: An Ecological Theology*, she suggests a model of the evolutionary universe as God's body, and explores how a theology based on such a model can function in transforming human-Earth relations.⁴⁶ In this text, she is most explicit about the role of the new cosmology in her thinking.

McFague takes on the challenge of praxis in her more recent works, continuing to

⁴³ Sallie McFague, *The Body of God: An Ecological Theology* (Minneapolis, Fortress Press, 1993), 104.

⁴⁴ *Ibid.*, 104-7.

⁴⁵ Sallie McFague, *Models of God: Theology for an Ecological, Nuclear Age* (Philadelphia: Fortress Press, 1987).

⁴⁶ *Idem*, *Body of God*.

operate within a cosmological framework. In *Super, Natural Christians: How We Should Love Nature* she argues that it is a Christian task to come to understand and love the natural world for the sake of ecological healing.⁴⁷ In her most recent book, *Life Abundant: Rethinking Theology and Economy for a Planet in Peril*, McFague argues that Christians in the West need to live differently in order to love nature and heal the ecological crisis.⁴⁸ In this book explicit links are made with liberation theology and the need to understand economics. In all of her work, McFague demonstrates what a praxis taking seriously the new cosmology in theology can look like, in response to the ecological crisis and other forms of injustice.

Heather Eaton

Heather Eaton advocates an ecofeminist functional cosmology in light of the new cosmology and the ecological crisis. Eaton studied the work of Thomas Berry for ten years, and has written on his work.⁴⁹ She is calling for the bringing together of the insights from ecofeminist theology⁵⁰ with the awareness of our place within the universe

⁴⁷ Sallie McFague, *Super, Natural Christians: How We Should Love Nature* (Minneapolis: Fortress Press, 1997.)

⁴⁸ Sallie McFague, *Life Abundant: Rethinking Theology and Economy for a Planet in Peril* (Minneapolis: Fortress Press, 2001).

⁴⁹ See Eaton, "Feminist or Functional Cosmology;" and "Critical Inquiry."

⁵⁰ Eaton is not the only ecofeminist theologian engaging with the questions and insights of the new cosmology. In addition to the contributions of Sallie McFague, discussed above, Dorothy C. MacDougall is engaging the new universe story and the work of Thomas Berry in *The Cosmos as the Primary Sacrament: The Horizon for an Ecological Sacramental Theology* (New York: P. Lang, 2003).

as presented by the new cosmology.⁵¹ There are ways in which insights from both discourses are similar. For instance, both ecofeminism and cosmology incorporate a multi-disciplinary approach to and analysis of the ecological crisis. Both engage in cultural critique and try to discern the roots of the problem. They are aware of the urgent need for effective change and offer possibilities for beneficial attitudes and actions. The discourses overlap in areas of analysis, such as that of the negative influences of patriarchy, Cartesian science and anthropocentrism. Both cosmology and ecofeminism consider that distortions within the ideological roots of Western culture have fostered a profound alienation from the earth to the degree that there is an element of unconsciousness (pathology, addiction) about the destruction of the earth.⁵²

Nevertheless, Eaton says, after this the discourses diverge. Ecofeminism focuses on domination as the central problem regarding the ecological crisis and domination of women. Cosmology as articulated by Berry considers the lack of a functional cultural worldview as central. These views are not mutually exclusive, but rather two distinct aspects of the ecological crisis. By bringing them together, additional insights are gained

⁵¹ See also Heather Eaton, "Ecological-Feminist Theology: Contributions and Challenges," in *Theology for Earth Community: A Field Guide*, ed. Dieter T. Hessel (Maryknoll, NY: Orbis Books, 1996), 77-92; "Response to Rosemary Radford Ruether;" "At the Intersection of Ecofeminism and Religion: Directions for Consideration," in *Ecotheology* 6.1, 6.2 (2001): 75-91; "This Sacred Earth;" and Heather Eaton, *Introducing Ecofeminist Theologies* (London: T & T Clark International, 2005). Eaton is cofounder of the Canadian Forum on Religion and Ecology. [Http://www.cfore.ca](http://www.cfore.ca). Accessed May 25, 2005.

⁵² Eaton, "Feminist or Functional Cosmology," 87-8.

that serve to strengthen their positions and insights.⁵³

John Haught

Process theology has been one form of theology particularly able to “accommodate and even reconcile with a postmodern, scientific, evolutionary cosmology.”⁵⁴ John Haught is a significant process theologian taking seriously the realities of the new cosmology in relation to theology and the ecological crisis.⁵⁵ In an early work, Haught calls for an understanding of the mind as intrinsically part of nature, and moves to argue for a sense of purpose to the universe.⁵⁶ In *The Promise of Nature: Ecology and Cosmic Purpose*, Haught continues this cosmological theme and moves his discussion into the arena of the ecological crisis.⁵⁷ He recognizes the role myth plays in our cosmological worldviews, and our increasing degradation of the Earth. Haught argues that scientific cosmology must be joined with theology if we are to create new myths that can halt and repair the ecological damage wreaked by humans.

⁵³ Ibid., 88.

⁵⁴ Eaton, “Critical Inquiry,” 49.

⁵⁵ He joins other process thinkers working at the intersection of science and religion. See also John B. Cobb, Jr., *Sustainability: Economics, Ecology, and Justice* (Maryknoll, NY: Orbis Books, 1997, c1992); Frederick Ferré, *Hellfire and Lightning Rods: Liberating Science, Technology and Religion* (Maryknoll, NY: Orbis Books, 1993); idem, “From Ecological Trinitarianism to Life-Centered Technology,” in *American Journal of Theology and Philosophy* 23 No. 3 S (2002): 221-235; David Ray Griffin, *The Reenchantment of Science* (Albany: SUNY Press, 1988); and Toulmin, *Return to Cosmology*.

⁵⁶ John F. Haught, *The Cosmic Adventure : Science, Religion and the Quest for Purpose* (NY: Paulist Press, 1984).

⁵⁷ Haught, *The Promise of Nature: Ecology and Cosmic Purpose* (New York: Paulist Press, 1993).

In more recent works, Haught continues his exploration, turning more specifically to the understanding of evolution as discovered by Darwin and later scientists, situated within the new cosmology. He addresses the fact that despite the radical shift in our understanding of the world and of God that evolutionary science brings us, evolution nevertheless fails to be grappled with significantly in theology, or in “the world of thought in general.”⁵⁸ Darwin’s contribution to theology, Haught argues, is to:

recapture the tragic aspects of divine creativity. Evolutionary science compels theology to reclaim features of religious faith that are all too easily smothered by the deadening disguise of order and design.⁵⁹

Anne Primavesi

Primavesi takes the findings of the new cosmology, through the lens of earth systems science and the Gaia hypothesis of James Lovelock and Lynn Margulis,⁶⁰ and asks what a Christian theology could look like if we take such findings seriously. In *Sacred Gaia: Holistic Theology and Earth System Science*,⁶¹ she argues that a theology that takes earth system science seriously *is* an earth science:

⁵⁸ Haught, *God After Darwin: A Theology of Evolution* (Boulder, CO: Westview Press, 2000), 1. See also *Deeper Than Darwin: The Prospect for Religion in an Age of Evolution* (Boulder, CO: Westview Press, 2003).

⁵⁹ *Ibid.*, 5.

⁶⁰ James Lovelock, *Gaia, The Practical Science of Planetary Medicine* (London: Gaia Books, 1991); *The Ages of Gaia* (Oxford: Oxford University Press, 1996, c1988).

⁶¹ Anne Primavesi, *Sacred Gaia: Holistic Theology and Earth System Science* (London; New York: Routledge, 2000).

This simply affirms that the systematic organization of human knowledge, in this case knowledge of God, now includes in its remit and discussions the environment in which that knowledge is systematized. It includes the perceptions that space and time, as we experience them on earth, preserve distance from and nearness to God for all living beings within a single evolutionary process.⁶²

Primavesi is calling for a ‘coevolutionary’ theology that refers to the fact that our development and that of all other beings on the Earth occurs together with that of the physical and chemical environment in which we live, in a single process.⁶³ For Primavesi, this has important implications for how we understand God and how God functions in the world.

Primavesi continues her exploration in *Gaia’s Gift: Earth, Ourselves and God after Copernicus*,⁶⁴ asking that we examine what the implications are for the place of the human on the Earth, and thereby our theology of the place and function of God, in light of the Copernican revolution. Even though Copernicus revolutionized our ideas of the place of the Earth in relation to the sun, most disciplines neglected to reorient themselves in light of that new information. “[T]he Copernican change from a geocentric to a heliocentric universe has not been accompanied by a shift away from homocentrism.”⁶⁵ Instead of seeing ourselves as having a unique status on the Earth, which leads us to

⁶² *Ibid.*, 20.

⁶³ *Ibid.*, 3.

⁶⁴ Anne Primavesi, *Gaia’s Gift: Earth, Ourselves and God after Copernicus* (London; New York: Routledge, 2003).

⁶⁵ *Ibid.*, 58.

damaging the world around us, we may want to begin recognizing the common relationships all living beings on Earth have with the sun, and learn to live out of deepening understanding of interdependence and interconnectedness.⁶⁶ Primavesi's work is an astute and creative example of the merger of theology and science in light of the new cosmology and the demands of the ecological crisis.

Conclusion

In this chapter I discussed how Christianity, despite limitations in its relationship to the natural world and the ecological crisis, can engage in specific activities within a functional cosmology that takes the insights of cosmogenesis seriously. I identified five key tasks the Christian tradition can undertake. I then explored contemporary Christian responses to the ecological crisis, with differing degrees of efficacy. Finally, I described in some detail the work of four theologians who offer appropriate cosmological responses to the ecological pandemic.

One of the functions of religion is to provide a way for human beings to live in community that is coherent with the larger world and the sense of meaning we ascribe to it. In the next chapter, I ask how people can live out the insights of cosmogenesis; what praxis rooted in the wisdom of cosmogenesis can look like, and how such praxis might be understood theologically.

⁶⁶ Ibid., 70.

CHAPTER FOUR

LIVING COSMOGENESIS

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.

Thomas Berry, *The Great Work*

My continuing concern in any theological endeavour is how ideas and commitments play out concretely in people's lives. In light of the ecological crisis for example, I ask, What are people doing in their own lives, individually and collectively, to make change? To what extent and how do religious concepts relate to such praxis? In the confines of this thesis, I investigate how people can live out the insights of cosmogenesis within a functional cosmology. I also explore what theological responses can assist in what I call *living cosmogenesis*.

The following pages are my interpretation and extrapolation of Berry's work on cosmogenesis within a functional cosmology. I suggest and described two interrelated ways of living cosmogenesis. I then explore several theological concepts that allow for this within a religious framework.

By teaching the human community about cosmogenesis as it is available from new

physics and as he understands it within a functional cosmology, Berry is doing more than offering us the content of the universe story, however awesome that content is in its own right. Beyond the content, Berry is inviting us to a shift in consciousness in light of the discovery of cosmogenesis as well as the urgent demand of the ecological pandemic. More than knowing about cosmogenesis in his functional cosmology, Berry wants humans to *know* cosmogenesis, rationally and intuitively, in its macrophase and microphase dimensions. He wants the human community to realize that we are cosmogenesis; the universe is a human process as much as it is also a mountain process, an ocean process, and a hummingbird process.

In my estimation, Berry invites humans to learn how to *live* cosmogenesis. Living cosmogenesis means becoming aware of our interconnectedness with the whole universe. It means learning how to live in mutual relationship with the Earth community, ever aware that we too *are* the time-developmental sequence of irreversible transformations, in our self-reflective consciousness and human creativity. Living cosmogenesis is opening up to what is already going on within and around us. It means awakening to the ‘dream of the Earth;’ this is a new revelatory experience:

This awakening is our human participation in the dream of the Earth, the dream that is carried in its integrity not in any of Earth’s cultural expressions but in the depths of our genetic coding [as a species]. Therein the Earth functions at a depth beyond our capacity for active thought. We can only be sensitized to what is being revealed to us.¹

¹ Berry, *Great Work*, 165.

In concrete ways, how do we learn to live cosmogenesis? I suggest that there are two ways of living cosmogenesis; a macrophase way, based on learning the universe story, and a microphase way, where we live out our awareness of cosmogenesis at the local level. These two modes need to be lived out together, for they are interrelated.

Macrophase and Microphase: A Definition of Terms

Many people have heard of microeconomics, the economics of the individual and the household, and macroeconomics, the economics of a society. Many people know that these two forms of economics are related, that one affects the other, and that we cannot have one without the other. The same is true of the microphase and macrophase aspects of cosmogenesis, of the universe.

As I have discussed in this thesis, the universe is not a thing or a place; it is a process. “[T]he universe is not a thing, but a mode of being of everything.”² The universe is the *way* beings are, not what beings are in. This is why scientists say that the universe is actually a cosmogenesis, a time-developmental sequence of irreversible transformations. Cosmogenesis is the way beings exist, characterized as we have seen by communion, differentiation and subjectivity. Cosmogenesis is a verb, rather than a noun.³

The universe can also be characterized by its microphase and macrophase modes

² Swimme and Berry, *Universe Story*, 27.

³ Heather Eaton, personal communication, May 10, 2005.

of being. Swimme and Berry define the terms thus:

By microphase we mean that which pertains to the here and now of a particular creature. By macrophase we point to the larger realities involved in the moment, both in terms of the largeness of the universe and of Earth and the mystery of the unborn future.⁴

The macrophase aspect of cosmogenesis then, is the story of the universe in its larger dimensions. The macrophase mode is the mode of star formations, galaxy developments, the emergence of life, ice ages, and mass extinctions, as well as the numinous mystery of the universe's origins.

The microphase mode of cosmogenesis is the particular local experiences and constraints of the various beings that are the universe. It is how the universe history has manifested itself in particular, differentiated ways in time and space. The microphase aspect includes the diversity of geographic regions on Earth; the specifics of the millions of species living on the planet today; the ways human creativity manifests itself in different cultures and times; and the distinct, particular ways that each creature in the universe is cosmogenesis.⁵

There are also macrophase and microphase modes of existence within the human community itself. The macrophase represents great cultural developments in history; the

⁴ Swimme and Berry, *Universe Story*, 55.

⁵ One example of this relates to time. The microphase mode of time means that my relationship to time is different than that of a mosquito, and that of a rock. The human, the mosquito and the rock represent three distinct microphase aspects of time. Time itself however within the cosmogenetic process is a macrophase mode; that all creatures experience the movement of time and participate within it through birth and death, in the case of living things, and through movement and change, in the case of nonliving beings, is an illustration of the macrophase aspect of cosmogenesis.

microphase aspects are how particular human communities and individuals interpret and contribute to culture. While the cultural expressions of the human community are also aspects of cosmogenesis⁶, for the purpose of the present discussion, I am referring to how humans live microphase and macrophase aspects of cosmogenesis in relation to the whole universe, not just the human community.

Living Cosmogenesis at the Macrophase: The Story of the Universe

How do humans live cosmogenesis in its macrophase mode? As Berry insists we can only do so by learning the story of the universe as it is now understood in new physics. This is an essential criterion for a functional cosmology that will restore human relations with the Earth and lead to ecological healing.

The universe story must be told, Berry says, in its concrete details, as best as they are understood, beginning with the origin moment when the universe came into being, through its history of surprises, reversals, and major transformations. The details of the primordial flaring forth must become common knowledge to both children and adults.⁷ We must also learn about the supernova moments that brought the Earth into being, the birth of stars, the emergence of life itself four billion years ago, and major milestones in

⁶ “The Earth, during these 5000 years [of human civilization], has resounded with music and dance, religious spectacles, and the dramatic presentations of peoples everywhere. All this emerged as expression not simply of the human but of the Earth itself in its vast range of creativity.” (Berry, *Great Work*, 30)

⁷ “Teaching children about the natural world should be treated as one of the most important events in their lives. Children need a story that will bring personal meaning together with the grandeur and meaning of the universe.” (Berry, *Dream of the Earth*, 131)

Earth's history up to the present day. The reason we must learn this story, he insists, is because not only is it miraculous and stupendous in its own right, it is the story of *ourselves*. Our story does not begin with the emergence of the first human, but with that deciding moment when the universe began.

The story of the universe is our continuing biological history. It is also the history of human culture, of religion, art, architecture, politics and economics. It is the history of agriculture and social organization. Cosmogogenesis teaches us that all that we are, in our human consciousness and ability to make culture, has as a common origin point the birth of the universe. Who we are in the universe and our role within it is absolutely, utterly dependent on that reality.

Most of us are woefully lacking in a basic scientific training, not only of the universe but also of the biology, chemistry, and physics of the Earth itself. We do not have scientific training that suggests meaning for the physical processes of the Earth and the larger universe beyond the material. We must go back then, and learn the universe story as the basic story of who we are. It is the macrophase moment of our existence.

We must also go back and reinterpret our human history in light of the universe story, so that we can begin to recognize the human role within the universe process. The book written by Berry with Swimme, *The Universe Story*, is their attempt to tell the universe story, in lay terms, in a manner that includes not only the emergence of the human but also major human developments as part of the narrative itself:

Living cosmogenesis is a concrete exercise; one cannot engage it in the abstract. It

can be tempting, I believe, to still think of the stars and the galaxies, including the Milky Way, as something ‘out there,’ as separate from us, mysterious and unrelated except in our nights out gazing at them and in the poetry we create about them. Yet as Berry continually reminds us the story of the universe is our personal story. It is the macrophase aspect of each one of us.

Living Cosmogenesis at the Microphase: The Bioregion

The microphase aspect of cosmogenesis is lived at the level of local, particular interactions among the living and nonliving creatures within a specified geographical region. Berry calls them bioregions, and defines them as follows:

A bioregion is an identifiable geographical area of interacting life systems that is relatively self-sustaining in the ever-renewing processes of nature. The full diversity of life functions is carried out, not as individuals or as species, or even as organic beings, but as a community that includes the physical as well as the organic components of the region.⁸

It is in the bioregion, he continues, that we are nourished, nurtured, educated, governed, healed, and ultimately fulfilled.⁹ Berry argues for perceiving ourselves as living primarily in bioregions, and only secondarily within nations.¹⁰

⁸ Ibid.

⁹ Ibid., 166-168.

¹⁰ Ibid., 169. The term ‘bioregion’ has been adopted by a specific, and growing, worldwide cultural and social movement of activists, farmers and community leaders. Bioregionalism, “...based on locally and regionally integrated, self-reliant, holistic economies networked through communication and limited trade linkages, offers a crucial contribution toward sustainable, healthy, and sane alternatives to an increasingly unhealthy, unsustainable, and fragile global capitalist monoculture.” (Mike Carr, *Bioregionalism and Civil Society: Democratic Challenges to Corporate Globalism* [Vancouver: UBC Press, 2004], 2.) Berry

It was within such particular, local places that humans originally felt themselves to be a part of the universe:

The human species has emerged within [a] complex of life communities; it has survived and developed through participation in the functioning of these communities at their most basic level. Out of this interaction have come our distinctive human cultures. But while at an early period we were aware of our dependence on the integral functioning of these surrounding communities, this awareness faded as we learned, through our scientific and technological skills, to manipulate the community functioning to our own advantage [which has led to the ecological crisis].¹¹

However, through our industrial ways of living and working, humans have become alienated from the world around us. Particularly in the West, we have lost touch with the

applauds this movement in *Dream of the Earth*. However, it is my understanding that the term can be used more generally, not necessarily in exclusive reference to the philosophies and practices of the bioregional movement. Many practices exist that fit within the understanding of a bioregion, without necessarily being linked with that social movement, such as organic gardening, community economic development, etcetera. In any case, precisely how bioregionalism is understood is diverse. For more information on the bioregional movement see Mike Carr, *Bioregionalism and Civil Society*; Michael Vincent McGinnis, ed., *Bioregionalism* (London: Routledge, 1999); Christopher Plant and Judith Plant, *Turtle Talk: Voices For a Sustainable Future* (Philadelphia, BC: New Society Publishers, 1990); Kirkpatrick Sale, *Dwellers in the Land: The Bioregional Vision* (Philadelphia; Gabriola Island, BC: New Society Publishers, 1991); and Robert L. Thayer, *LifePlace: Bioregional Thought and Practice* (Berkeley: University of California Press, 2003).

¹¹ Berry, *Dream of the Earth*, 164.

natural processes in which we are embedded; many people, especially in urban areas, do not know where their tap water comes from, or the names of most of the birds, flowers and other living beings that share their neighbourhoods.

Such alienation has led directly to the ecological crisis, for as Sallie McFague says, “We do not care about what we do not know.”¹² Further, humans’ lack of intimacy with and knowledge about the physical world in which we exist prevents us from knowing the insights of cosmogenesis deeply.

If we do not know the local areas in which we live, we will be unable to live cosmogenesis completely. We cannot fully realize the insight of our role in the cosmogenetic process, as self-reflective consciousness of the universe. We will be unaware in concrete ways of our participation in the historical journey of the universe. We will not fully experience the qualities of differentiation, subjectivity and communion with the whole and the parts of the universe. We will struggle to feel our literal (rather than metaphorical) cousin relationship with the community of beings on the Earth, and we will most certainly, in my opinion, continue to struggle with the insight that the universe is the primary revelatory experience.

The need to live cosmogenesis in its microphase aspect then is twofold. For one thing, we will continue to destroy what we do not understand. The ecological crisis will deepen, as will social injustice. For another, if we do not come to know the regions in

¹² McFague, *Super, Natural Christians*.

which we live, we will be unable to find the massive psychic strength necessary to create ecological healing. If we do not know our own bioregions, we cannot live cosmogenesis at the level at which it can become a functional cosmology, capable of creating the vision and strength for massive change. There will still be a lag between what we learn about what is 'out there' in space and 'back then' in time, and what surrounds us physically and spiritually everyday.

Living the Macrophase and Microphase Aspects of Cosmogenesis Together

As I stated earlier, the macrophase and microphase modes of cosmogenesis are interrelated; the universe process is expressed in its most specific, intimate details in the concrete experiences of the entire community of beings that are the universe. The joys and tragedies, life and death, constraints and possibilities of expansion that reside in the microphase are expressions of the macrophase existence of the whole of cosmogenesis, including the mystery inherent to the process. Human beings live the process of cosmogenesis in the macrophase by coming to know the larger epic of evolution, paying attention to its details, and recognizing its psychic-spiritual and physical-material dimensions. We live cosmogenesis in the microphase by consciously relating to the rest of the bioregion we inhabit within the context of the universe story.

Berry's functional cosmology rests on the principle that these two aspects must be brought consciously into alignment. While it is impossible to only live one aspect – we are always imbedded in the macrophase aspect of the universe, whether we acknowledge

it or not, and we also live within particular bioregions, whether or not we recognize their existence – it is necessary to consciously bring them together, for the sake of human-Earth relations and ecological healing. Indeed, human beings need to do so: “To identify the microphase of our being with the macrophase mode of our being is the quintessence of human fulfillment.”¹³

Living Cosmogenesis: Understanding It in Theological Terms

Berry suggests that cosmogenesis can be understood theologically, as primary revelatory experience, source of awe and celebration, and as a common creation story available to all religious traditions. How then can living cosmogenesis, in the manner I described above, be conceived in religious terms?

Living Cosmogenesis in the Macrophase: Emergent Theology

As I discussed above, living cosmogenesis in its macrophase mode entails learning the details of the narrative of the universe as the larger human story, and reinterpreting human history, religion, economics, education, and other institutions in its light. A macrophase task of living cosmogenesis religiously then is to reenvision theology in its larger dimensions; to develop an emergent theology.

As Anne Primavesi argues, human knowledge of God is informed by the

¹³ Berry, *Great Work*, 164.

environment within which human beings reside.¹⁴ Humans are emergent:

As an emergent human being I continuously interact with but am structurally distinguishable from the dimensions of environment out of which I emerge and which I inhabit, and from other autopoietic entities [subjects] and their environments.¹⁵

Because of the discoveries of new physics and more specifically earth science, we now know that humans are ‘structurally coupled’ with our environment, which means that there is a close, reciprocal relationship between our own evolution and the evolution of the setting in which we are immersed.¹⁶ The setting or environment is not a thing; it is the “continuous interactions” between one’s self, the “physical/chemical/earthly dimension,”¹⁷ and the social realm of “language, ritual, sex, education, play, culture and religion.”¹⁸

Humans are coevolutionary, to use Primavesi’s term.¹⁹ We continually emerge and evolve in cosmogenesis. Since this is the environment within which we reside, our theology, the understanding and organization of human experience and relationship with the divine, should signal this. It should reflect upon and be representative of our

¹⁴ Primavesi, *Sacred Gaia*, 20.

¹⁵ *Ibid.*, 25.

¹⁶ *Ibid.*, 3.

¹⁷ *Ibid.*

¹⁸ *Ibid.*, 8.

¹⁹ *Ibid.*, 3.

participation in cosmogenesis. John Haught, working with the legacy of Darwinian science, calls it evolutionary theology, and defines it thus:

Evolutionary theology claims that the story of life, even in its neo-Darwinian presentation, provides essential concepts for thinking about God and God's relation to nature and humanity. ...[It] seeks to show how our new awareness of cosmic and biological evolution can enhance and enrich traditional teachings about God and God's way of acting in the world. ...[E]volutionary theology discerns in evolution a most illuminating context for our thinking about God today.²⁰

Cosmogenesis as Berry comprehends and utilizes it in his functional cosmology, is more than a context for pondering God. "The overriding theological understanding is that the patterns of time throughout the evolution of life on earth have been, and are, continuously revelatory of Godself," Primavesi insists.²¹ Developing an emergent theology can become a religious way of living cosmogenesis in its macrophase mode.²²

Living Cosmogenesis in the Microphase: Preferential Option

The legacy of liberation theology is useful in considering theological ways of living cosmogenesis in its microphase mode. Liberation theology emphasizes the concrete realities of the poor; this corresponds to the microphase need of knowing the local

²⁰ Haught, *God After Darwin*, 36.

²¹ Primavesi, *Sacred Gaia*, 12.

²² Other theologians are offering macrophase models of theology in light of the new cosmology. Ruether affirms, "Surely, if we are kin to all things and offspring of the universe, then what has flowered in us as consciousness must also be reflected in that universe as well, in the ongoing creative Matrix of the whole." (Ruether, *Gaia and God*, 253). Dorothy McDougall explores an "ecological sacramental theology" based on the emergent universe as primary sacrament (McDougall, *Cosmos as the Primary Sacrament*).

bioregion in which we live. The preferential option for the poor recognizes the subjectivity of the most oppressed within society, and urges the necessity of Christian praxis that honours that subjectivity. Theologies of liberation have expanded to include not only poverty as a condition of marginalization, but also race, gender and most recently, nature.²³

A microphase mode of living cosmogenesis demands that humans come to know the place in which they live, in its earthly as well as social dimensions. Knowing that is rooted in cosmogenesis recognizes the subjectivity of all entities. This can become a Christian praxis. McFague asserts:

Christian practice, loving God and neighbour *as subjects*, as worthy of our love in and for themselves, should be extended to nature.²⁴

McFague argues for a subject-subjects model, extended to become an ecological model of care, that is based on knowing and loving nature as itself, not what it can do for human beings. We need to come to love nature, McFague argues, if we are going to counter the massive ecological exploitation occurring around the planet. Loving the natural world means knowing it. The natural world is not just that which exists outside of

²³ In addition to the ecofeminist liberation theologians named throughout this text, a significant feminist liberation theologian is Dorothee Sölle, *Thinking about God: An Introduction to Theology*, transl. John Bowden (London: SCM Press; Philadelphia: Trinity Press, 1991, c1990). Leonardo Boff is a well-known liberation theologian engaging directly with the ecological crisis. See Boff, *Ecology and Liberation*; and *Cry of the Earth, Cry of the Poor*, transl. Philip Berryman (Maryknoll, NY: Orbis Books, 1997).

²⁴ McFague, *Super, Natural Christians*, 1. Original emphasis.

cities, in rural fields and rainforests. The wild²⁵ is everywhere, including in our cities. A preferential option for the exploited Earth, then, requires a knowledge of the natural world, within the specific bioregions individuals are located.

Ivone Gebara offers a related model of knowing that she terms “ecofeminist epistemology.” This model rejects patriarchal and hierarchical frameworks of disembodied knowledge, and is rooted in personal experience: “Knowing is not primarily a rational discourse on what we know. To know is first of all to *experience*, and what we experience cannot always be expressed in words.”²⁶ Ecofeminist epistemology is liberationist, recognizing the disproportionate effects of the ecological crisis on the poor, and extending the preferential option to the natural world. Reflecting a sensitivity to the new cosmology, this model rejects any idea that we can know the natural world without engaging with it as subject, or without acknowledging that humans beings are integral within it. Experience is also local and context-specific. Ecofeminist epistemology thus directs us again to the microphase aspect of cosmogenesis, the bioregion, which by definition is known in these ways.

Ecofeminist epistemology and the ecological model of care reflect the microphase

²⁵ McFague distinguishes between wildness, which refers to the realities of the other than community that exists all around us, and wilderness, as we commonly understand it. She is careful to prioritize encounters with wildness, which are accessible to all people, especially in urban centers, through city parks, abandoned lots, and creeks. Wilderness is often accessible to the elites in society, mostly in Western societies. While wilderness must be preserved for the sake of biodiversity, McFague argues for the need to foster the growth of places in urban centres where humans can encounter wildness. Such a practice recognizes the race and class dimensions of the ecological crisis and mainstream environmentalism.. See *ibid.*, 123-129.

²⁶ Gebara, *Longing for Running Water*, 48.

aspect of living cosmogenesis. By learning to love nature through paying attention to the particular parts of nature around us, we can recognize ourselves within the larger scheme of things.²⁷ We would discover our participation in the natural world and its psychic-spiritual dimension:

“[I]n [the ecological] model, the self is not just related to nature; rather, nature is constitutive of the self. Whatever we are has its roots in nature... If nature is part of us, so we are part of nature; that is, not only are we body, but nature is spirit (or subject, soul – whatever we call that part of ourselves that we consider ‘more than’ nature). The ‘more than’ part of ourselves may be realized differently in various dimensions of nature, but it is also there...²⁸

In a religious context of living the microphase aspect of cosmogenesis, knowing the local bioregions we live in becomes a necessary Christian praxis rooted in a recognition of and commitment to the subjectivity of the marginalized and oppressed.

A Praxis for Ecological Recovery: Living “As If”

The human community is still mired in a worldview that estranges human beings from the rest of the Earth. It is extremely difficult to imagine an alternative way of living. At the same time, the magnitude of the ecological pandemic demands immediate, direct and radical action. Recycling, purchasing compact fluorescent light bulbs and composting are not enough. Yet, living out of the insights of cosmogenesis fully will take time; the

²⁷ McFague tends to emphasize the idea that nature others are ‘not us,’ in order to highlight that they have their own subjectivities completely independent of human beings. Her work can tend to read then as though it were not operating out of an emergent model, but one where human beings are different and separate from nature. However, upon closer reading I think that she is challenging the practice of loving nature for our own ends, even such high ends as a path to God.

²⁸ *Ibid.*, 104.

human community needs to allow its implications to affect and change our worldviews, and eventually translate into action.

The urgency of ecological crisis demands that we begin acting as though our worldviews already reflect the wisdom and vision of cosmogenesis. Primavesi calls this living “as if.” It is an important move in healing ecological exploitation, and a remedy to human alienation from the Earth. We begin to live as if we already understand the insights of our interrelatedness in the evolutionary process:

Therefore to make a conscious transition...to a perception of my being an earth-centred human, I need to relate to earth *as if* my whole existence depends on that relationship. I need to relate to my fellow human beings *as if* our earth lineage were as central to our being alive as are our human genealogies. I need to relate to them *as if* their earth-centredness is as essential for my being with them and their being with me as are their human parents. I say *as if* because we need to grow into this kind of attention to our earth heritage.²⁹

This, of course, is the challenge of living cosmogenesis. Even as we learn the story of the universe, even if (as) we accept Berry’s position that cosmogenesis means that the universe has had a spiritual dimension from the beginning, it is still immensely difficult to figure out how to live out of such insights. Emergent theology is a suggestion of what theology can look like when it is lived in the macrophase aspect of cosmogenesis. Knowing nature within a liberationist model of preferential option for the marginalized provides a microphase praxis of living cosmogenesis religiously. The two examples are needed together, I suggest, to provide the fullness of living cosmogenesis in its

²⁹ Primavesi, *Gaia’s Gift*, 82.

macrophase and microphase modes.

Conclusion

In this chapter I have suggested a way Berry's understanding and utilization of cosmogenesis within a functional cosmology can be interpreted. Drawing on qualities of all entities in and of the universe itself, macrophase and microphase dimensions of existence, I argued that Berry is calling the human community to live cosmogenesis in concrete ways. Learning the story of the universe and discovering the local bioregions we live within are the examples I provide.

For Berry, the insights of cosmogenesis are religious insights, among others. Therefore, I explored theological ways of living cosmogenesis in its two dimensions: emergent theology and knowing nature as a liberationist Christian praxis.

The following chapter concludes my thesis, summarizing what I have discussed and returning to the context out of which my concern and interest arises, the ecological pandemic.

CHAPTER FIVE

CONCLUSION

I set out to in this thesis to explore the meaning of cosmogenesis in relationship to cosmology as worldview, particularly as it can be understood theologically. Because Thomas Berry's work on functional cosmology and the understanding of the emergent universe is the most comprehensive to date, I focused on his insight into and utilization of cosmogenesis within what he terms a functional cosmology. Both Berry's commitments and my own are primarily to the ecological crisis; therefore, I engaged with my subject within that context.

In the course of my research, I discovered several things, which I elucidated in this composition. In Chapter One, I explained that cosmogenesis is a complex concept with mythic dimensions. The work of Pierre Teilhard de Chardin as well as Berry highlights the psychic-spiritual aspects of the emergent universe. In this chapter I located Berry's work within the larger dialogue between religion and new physics, including one understanding of cosmology as worldview. Within this new cosmology, Berry's position is that the ecological crisis represents a problem of cosmology. An understanding of cosmogenesis in its physical and psychic dimensions is necessary to counter this problem.

In Chapter Two, I presented my findings on how more specifically a comprehension of cosmogenesis factors into Berry's functional cosmology. Because how his cosmology operates is based on his understanding of human communities, I outlined

several features of how such communities work. I also discussed what dysfunctional cosmologies look like in Berry's estimation, and then moved on to identify five key aspects of cosmogenesis that influence his functional cosmology.

In Chapter Three, I turned my attention more closely to the part the Christian tradition can and does play in relation to the ecological crisis and functional cosmology. Although there are limitations to Christianity's response to the ecological pandemic and nature, there are also several ways that the tradition can operate within a functional cosmology in light of cosmogenesis. From the work of Berry, I distinguished five tasks that acknowledge the mythic dimensions of cosmogenesis and foster ecological healing.

The ecological crisis has already called forth responses from within the Christian tradition. In the second half of Chapter Three, I outlined four categories of solutions offered by theologians, in order of ecological efficacy. One of those is that of cosmology; within that grouping, there are a number of theologians attempting to respond adequately from the insights of the emergent universe. I detailed the work of four such scholars, highlighting the range and depth of Christian cosmological reactions to the ecological pandemic.

In Chapter Four, I offered my interpretation of Berry's insistence that the human community engage with the story of the universe within a functional cosmology. To me, this means living cosmogenesis; attempting in concrete ways to live out its insights. I believe that there are two interrelated modes of cosmogenesis, the macrophase and the microphase. I defined them and proposed what living them can mean. I then suggested that, since the emergent universe is the primary revelatory experience according to Berry, there are theological ways we can understand and live cosmogenesis in its twofold

dimensions. With the ecological crisis at a level of unimaginable magnitude, we cannot wait until human beings, particularly in industrial societies, begin to understand cosmogenesis and allow it to change their worldviews and their life habits. I recommended in this chapter that we begin living as if we already realize the human role in the universe process, and in the meantime continue the work of real comprehension.

During the course of my researching and writing this thesis, the ecological crisis has worsened. More species have gone extinct; more preventable environmental disasters have occurred, more people have become poisoned, and more permafrost has melted. The urgency of the ecological pandemic demands immediate, radical action. Too few individuals and communities are engaging in that work. The problem is at its root one of cosmology. Living cosmogenesis, however, can assist people in changing their worldviews to reflect the integral place of the human within the life systems of the Earth. Especially for those living and working within the Christian religious (and cultural) tradition, Berry offers a vision for beginning to operate out of a truly functional cosmology. If we do so, we can begin to dream into existence new human-Earth relations that will mark the Ecozoic Era, the next phase in Earth history. As Berry says, the dream drives the action.

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