

A Story of Life and An Environmental Ethic of Life-Giving Creativity

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1. Introduction

Today, pollution of air, water, and land is approaching a point of no return. Some scientists say that a major extinction of the Earth's species— “the sixth extinction”—is already in progress. Past major extinctions were caused by some drastic environmental changes. The most recent—the fifth—was caused by collisions between Earth and an extraterrestrial bolide. The sixth extinction, however, is believed to be caused by humans. It is believed that humans, with the invention of agriculture about 10,000 years ago, did not have to interact with other species for survival, and so could manipulate other species for their own use, which eventually led to the massive violation of the ecosystem today (Eldredge 2001).

John Paul II closely relates the current ecological crisis to other moral challenges we face today. In his 1990 World Day of Peace Message, *Peace with God – Peace with All of Creation*, John Paul II identifies the environmental crisis as an urgent moral and theological crisis, which arises primarily from the lack of respect for life. Hence, John Paul II calls urgently for a morally coherent world view, which can provide a basis for solutions to the environmental problems (John Paul II 1990, No. 1, No. 2).

In response to the current ecological crisis, the theologian Jürgen Moltmann calls for a dialogue between theology and science. Noting that today theology and science have become “companions in tribulation under the pressure of the ecological crisis, and now share a common destiny”, Moltmann argues that if human beings and nature are to survive at all on Earth, theology and science must work together in search for a new direction for human life (Moltmann 1993, 23, 34).

Cultural historian Thomas Berry calls the current ecological crisis a religious crisis, a consequence of the separation of humans from nature, and of human history from the history of the Earth. Berry urges that we move from our human centeredness to an earth-centered norm of reality and value, and restore a balance in earth-human relationships (Berry 1999, 58). If the

human species is to survive, Berry insists, we need a new unifying context for humanity, for “no community can exist without a unifying story”. He suggests that we can “discover” such a context by turning to contemporary science and forging a new story of the universe (Berry 1988, 194-195).

In our postmodern age, there is often a focus on fragmentation and the incompleteness of all knowledge. I propose that we move beyond the fragmentation of our age by drawing together core convictions from science and religion into a new unified world view. I echo Berry and emphasize that we need a shared story of life that can give us such a world view, which we can tell in a way that brings us together, and enables us to deal with the current ecological crisis.

Guided by a contemporary scientific story of life, of which Berry speaks, and which is rooted in Christian faith, my aim is to promote in this paper an environmental ethic that could foster ecological responsibility, and to provide Christians with a sacred story that will enable us to relate to people of other faiths and ultimately to all people of good will.

In the next section, I will describe a new story of life as a story of life-giving creativity. I will argue that such a story of life provides a morally and theologically coherent world view. In Section 3, I will propose to formulate an environmental ethic of life-giving creativity as a Lakatosian research program¹, and as a framework that can provide the common ground for a dialogue between science and religion. In Section 4, I will examine the potential of a story of life to become an educational and religious educational guide for fostering a greater sense of ecological responsibility, and conclude the paper.

2. A Story of Life

Long, long, long ago, there was only a tiny speck in the vast blackness. It was extremely small, hot, and dense. Then, some 13 billion years ago, the little speck exploded in a giant firework, sending off hot flakes in all directions. Scientists call this explosion the Big Bang. So, with the Big Bang, began the grand cosmic dance that gave birth to the universe that continues to expand to this very day².

Everyone loves a good story. I begin here with Big Bang, a story from science that can help us gain a deeper understanding of who we are and of our place in the universe, and can enable us to deal with the current ecological crisis.

The Big Bang theory tells us how the universe emerged from a tremendously dense and hot state about 13.7 billion years ago and has been expanding and cooling ever since. Edwin Hubble, an American astronomer, discovered in 1929 that distant galaxies were moving away from us, such that the farther a galaxy is, the faster it is moving away. In other words, we are living in an expanding universe—not in a fixed and unchanging world as it was previously thought. The distance between the different galaxies is growing all the time (Hawking, 57). And yet, despite this ever increasing expansion, radiation released from the Big Bang is still all around us today.³

Scientific discoveries of the twentieth century are often described as revolutionary, giving rise to a new view of the world. In this new view, nature—including all life forms—is understood to be

evolutionary, historical and emergent, and as governed by a complex combination of law and chance, whereas in the old view, nature was thought to be immutable with no genuine novelty, and governed by fixed and deterministic laws. To use Kuhn's term, a paradigm shift has occurred in science (Kuhn 1996).

The Big Bang theory tells us that the universe in which we live has been and is expanding still. Related to the Big Bang theory is the anthropic principle, the idea that the universe appears to be fine-tuned, or designed, in order to allow the development of life. It tells us that if any of the basic physical constants at the time of Big Bang had been slightly different, life as we know it would not have been possible (Hawking, 130).

In the meantime, quantum "mechanics" introduces unpredictability, or randomness, into science. Quantum mechanics can only predict a number of different possible outcomes, rather than a precise outcome, and tell us how likely each of these is. Quantum theory also tells us that protons, neutrons, and electrons, which were thought to be indivisible basic building blocks of matter, are in fact made up of smaller particles called "quarks." One of the most unsettling discoveries about quarks is that they cannot be measured in isolation—at least not so far. They exist only in relationships—only in a larger whole. As such, nature in this "evolutionary" view is characterized as relational and interdependent, and is seen as a community of life, of which humanity is a part (Barbour 1997, 282-284; 324).

A Story of Life-Giving Creativity

When the universe cooled a little, a force called gravity joined in the cosmic dance. Over thousands of millions years, this force made the scattered flakes to clump together, forming large galaxies. As time passed, the hydrogen and helium gas in the galaxies broke up into smaller clouds. From these clouds our first stars were born —zillions of them!

Then, about 5 billion years ago, a large cloud of gas containing the debris of earlier supernovas gave birth to the Sun, the Earth, and the other planets in the Solar System.

The unfolding story of the universe is a story of cosmic creativity, and leads to life. The universe is the stage for the drama of both astronomical and biological evolution. Stars are a key stepping stone on the way to life. Massive stars forge heavy elements, such as carbon, and oxygen, which constitute biological organisms. At the end of their lives, such stars explode into supernovas, and give large nuclei to the galactic molecular clouds, from which new generations of stars and their accompanying planets are born (Adams, 34-35).

Over time, the surface of the Earth cooled, forming a solid crust. Slowly, the Earth's atmosphere became filled with carbon dioxide as the volcanoes released into the atmosphere a gas that is essential to life—carbon. After a billion years, the first living cell, a form of bacteria, emerged. Bacteria could reproduce themselves, and they multiplied rapidly. The Earth would never be the same again.

The first living cells consumed various materials, including hydrogen, and released oxygen. Free oxygen, once it entered the Earth's atmosphere, turned everything into dust. The remaining cells,

in order to protect themselves from the harmful gas, went underwater. And there they hid for the next 2 billion years. Then, 2 billion years ago, new forms of bacteria emerged. This time, they received their energy from the Sun, their hydrogen from the water, and their carbon from the atmosphere. And they learned to power their living activities with oxygen. These “clever” bacteria had managed to use the once harmful gas to their advantage. It was now possible for living things to survive in the Earth’s oxygen atmosphere. For 90 percent of the Earth’s history, all living things remained underwater.

The first life forms that left the water to explore the land were plants. Plants had long survived the strong currents of the ocean. Once on land, they found themselves baked by the Sun and flattened by gravity. Eventually, plants learned to cope with the new environment by developing a hard outside. They had “invented” the wooden cell! With this protective surface, plants could now stand tall and not dry out. This was about 425 million years ago.

About 200 million years after the plants began to spread over the land, the first animals appeared. Then, about 240 million years ago, dinosaurs appeared on the Earth. They traveled and hunted together for food. The dinosaurs were the first animals that looked after their young ones. About 100 million years later, the first bird, a descendent of the dinosaur, began to fly over the Earth’s surface. It took another 25 million years for the first mammals to appear on the Earth.

Then, about 200,000 years ago, our direct ancestors, Homo sapiens, began to walk the Earth. Newcomers to the universe, we humans took our first steps in the exciting cosmic dance that had started with the Big Bang some 13 billion years ago!

I argue that this cosmic story of life is a story of life-giving creativity. All life forms as we know them today are made of the materials that came originally from the stars—made available through their creative, life-giving transformations from hydrogen to helium to carbon to protein. They have already been incorporated in the thousands of animals and plants and even in non-living elements on Earth, such as rocks. As such, life-giving creative forces of the universe have been and are still in constant action, while continuously reshaping the universe. Hence, I claim that an evolutionary view of the world—the relational and communal view of the world with life-giving creativity—is inherently moral, for it conveys a message of human ethics. It locates humanity in the natural world in a morally meaningful manner.

Similarly, Murphy and Ellis argue that in the contemporary evolutionary world view, there is evidence for a kenotic⁴ principle of morality—that of self emptying and self sacrifice. They view the kenotic as representing the moral nature of God. Moreover, they recognize in the unfolding universe the necessary conditions for morality—law-likeness and chance. In order to be moral, one is to act freely within the confines of the laws. For without law-likeness, or order, free response is meaningless, and unless the physical events in the universe also allow chance, a meaningful moral response is not possible (Murphy et al., 206). Elizabeth Johnson also recognizes that the radical freedom (chance, or randomness) found throughout the universe is the condition for the possibility of the emergence of free and conscious human beings as part of the universe (Johnson 1996, 3).

How can then God act in an evolving world that is governed by contemporary scientific laws? Can an evolutionary world view be compatible with the Christian traditions?

Karl Rahner, in his essay “*The Unity of Spirit and Matter in the Christian Understanding of Faith*”, argues that Christianity is compatible with an evolutionary view of the world. In search of new contemporary insights to inform intellectual efforts to understand and confess Jesus Christ, Rahner shows systematically that Incarnation is “an intrinsic possibility” within an evolutionary view of the world (Rahner 1969).

Quoting Thomas Aquinas, the International Theological Commission—an advisory body to the Vatican congregation of the Doctrine of the Faith—states that divine causality can be active in a process that is both contingent (chance) and guided (lawful). But any evolutionary mechanism that is contingent can only be contingent because God made it so (ITC 2004, no. 69).

Similarly, quoting Thomas Aquinas, Elizabeth Johnson states that “the stuff of the world” has an inherent creativity by means of which the new continuously emerges through the interplay of chance and law. Seeing in nature inherent creativity that continuously renews the world, Johnson points out that creatures participate in the divine by being creative and by sustaining in their own right. For it is a measure of the creative power of God to raise up such creatures, and furthermore, God is glorified by the creature’s flourishing in the fullness of its powers—not by its diminishment (Johnson, 6).

Thomas Berry, on the other hand, is not very optimistic about the role of the Christian traditions in embracing the new evolutionary, ecological world view. He argues that religion—more specifically anthropocentric Christianity—is much to blame for the gulf between nature and humanity that has subsequently led to the present ecological crisis (Berry et al. 1991, 15-7).

In response to Berry’s criticism of Christianity and the perceived discontinuity between the new world view and the Christian traditions, Donald Senior argues, in contrast, that there is a fundamental continuity between a new story of the universe and many biblical themes. Senior suggests that there is much in the “treasure house” of biblical themes that can be brought to the new story (Senior 1991, 41-50).

I agree with Senior that there is much we can discover from the Christian traditions that can contribute to the new story. One such example is Saint Francis of Assisi (1182-1226), who was named the patron saint of ecology by Pope John Paul II in 1979. Saint Francis embraced all of nature, including all non-living creatures, as part of God’s family. He saw all things in the natural world as sisters and brothers—as God’s gifts. Francis’ world view was truly inclusive, relational and communal (Dennis 1993).

Finally, John Paul II says: “Nature becomes a Gospel that speaks of God”⁵. John Paul’s vision of nature highlights solidarity among human beings and between human beings and nature, which needs to be an essential part of our new story.

3. An Environmental Ethic of Life-Giving Creativity

Then, what does the notion of life-giving creativity entail in terms of ethics?

I will use the term “creativity” to refer to our *active participation* in God’s continuous creative activity in the world, and the term “life-giving” to mirror God’s self-communication. According to Karl Rahner, the essence of the Christian message is that God communicates God’s own divine reality and makes it a constitutive element in the fulfillment of the creature (Rahner 1997, 116-137). God’s self-communication is self-giving. In God’s self-giving, the giver is also the gift. The giver, God, gives God-self to creatures as their own fulfillment. Ultimately, God’s gift to humanity is life, and the condition necessary for our own fulfillment.

The notion of life-giving, then, is not only theological but also ethical to the extent that our own fulfillment is considered as valuable, whether personally and socially. Environmentally, fulfillment would mean “respect for all forms of life.”

In terms of ethics, the principle of life-giving creativity leads to a focus on fulfillment. Jesus said, “I have come that they may have life, and have it to the full” (Jn 10:10).

The potential of such ethical principle is great. In particular, it can facilitate science-religion dialogue in search of a solution to the current ecological crisis. I propose that a Lakatosian research program be used, which can bring science and religion together in a systematic framework. For Lakatos, what we think of as a “theory” is actually a group of slightly different theories that share some common idea, or what Lakatos called their “hard core”. The hard core can then be protected by “auxiliary hypotheses,” which can change as necessary, and without affecting the hard core.

Several scholars advocate that theology can and does act as a Lakatosian research program (Hefner 1993; Murphy 1990; Barbour 1997, 134). Murphy and Ellis also outline their theory of kenotic ethic as a Lakatosian research program (Murphy et al. 1996).

In a research program for an ethical theory of life-giving creativity I am proposing, the hard core can be stated as follows:

Life-giving creativity for the sake of all is humankind’s highest good.

Such a research program can provide a framework within which ethical and theological implications of the story of life along with scientific theories can be connected as related theories, hypotheses, and empirical data, which can support and protect the hard core at its center. Different religious traditions can also be related systematically in such a framework. For example, religious traditions with their beliefs and claims can be represented as “small” independent research programs, each of which forming a cluster of related ideas concerning environmental ethics. From each of the clusters, higher level generalizations can emerge, which can give rise to a novel hypothesis, thereby providing connections among different clusters. As such, I argue that the Lakatosian methodology has potential to harmonize and bring together scientific theories, which are tentative hypotheses that are revised continually, and religious beliefs that the faithful accept often with a leap of faith.

4. Religious Education for Ecological Responsibility

A new story of life has emerged from science, a story filled with the wonders of life and the mysteries of the cosmos. We can tell this new story of life to our children. It will help them discover their place on Earth and in the vast universe. They will look up in awe at the faraway stars in the clear night sky and come to understand the inter-relatedness of all things—plants, animals, rocks, the land, the ocean, the air, and even the stars. This story will help our children see themselves as a “precious part” of the Earth and of the ever-expanding universe itself.

As such, a story of life has the potential to become an educational and religious educational guide for fostering a greater sense of ecological responsibility. In terms of religious education, the story of life has the potential for bringing to Christians a sense of the place and significance of the human in relation to God and all of God’s creation, and providing them with a sacred story that enables them to relate to people of other faiths and ultimately to all people of good will (O’Gorman 2001).

Concluding Remarks

Inspired by Thomas Berry’s vision of a “sacred” story of the universe, and motivated largely by its ecological potential, I have explored its implications in this study for environmental ethics.

I have outlined the so called “new story” as a story of life. The contents of the story are not really new. They are a collection of dominant scientific theories of our time. What is novel is Berry’s vision for bringing the scientific contents to the foreground of our daily context from the highly specialized domains of science. As such, the purpose of the story is not so much to provide a scientific account of life. It can very well be called a myth, a myth which functions to help us find meaning and value in our lives and in the world.

I have argued that running through the story of life is a moral principle of life-giving creativity, based on which we can develop a theory of an environmental ethic. I have also reviewed briefly the theological implications of the story of life in the light of my Christian faith. I have proposed that such a theory of ethic be developed as a Lakatosian research program, and suggested that it can provide the common ground for science-religion dialogue to save our Earth.

For future work, my suggestion is to explore afresh the treasure house, the beloved bible, and rediscover what is there and what can be “repurposed,” or reinterpreted in the new light brought by a new evolutionary and ecological story of life. Undoubtedly, one will find new insights, images and understandings that can be reclaimed for today. What some of them are, and what we can do with them will be part of future investigation.

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NOTES

¹ A This program was developed by Imre Lakatos (Lakatos 1978) as an effort to harmonize the well known conflict between the two opposite views of philosophers of science of the twentieth century—Karl Popper and Thomas Kuhn. The British philosopher Karl Popper is known for his contributions to the understanding of scientific reasoning and his attacks on historicism. His works include *The Logic of Scientific Discovery* (1931). Thomas Kuhn is most famous for his book *The Structure of Scientific Revolutions*, in which he presented the idea that science does not evolve gradually toward truth, but instead undergoes periodic revolutions which he calls "paradigm shifts."

² The primary resources I have consulted for the scientific content of a story of life as presented in this paper are: Hawking's *A Briefer History of Time* (Hawking 2005) and Swimme and Berry's *The Universe Story* (Swimme 1992). To make the story more easily accessible to children, I have written it "down" to a readability score of 7 (meaning 7th grader and above) from a representative passage in the story.

³ Radiation from the very hot early stages of the universe was discovered in 1965 by two American physicists, Penzias and Wilson. For this, they were awarded the Nobel Prize in 1978 (Hawking, 61).

⁴ As an ancient Greek word, κένωσις kénōsis means an "emptying". In a Christian theological context, the word kenosis is used as the concept of the 'self-emptying' of one's own will and becoming entirely receptive to God, as in Philippians 2:7, "...he emptied himself..."

⁵ John Paul II' general audience, January 26, 2000.