

ANTHROPOLOGY VERSUS COSMOLOGY

A Schism in Cosmogenesis

Rayappa A. Kasi♦

1. Introduction

In 1962, Rachel Carson, a marine biologist with a long career at the U.S. Fish and Wildlife Service, changed hearts and minds across the planet when she published “*Silent Spring*,” one of the most famous environmental books ever written. Carson aimed to show that humans are part of the natural world, as vulnerable to damage as other elements of the ecosystem. “The most clearly we can focus our attention on the wonders and realities of the universe about us, the less taste we shall have for destruction,” Carson wrote.¹ *Silent Spring*’s message raised awareness of how the environment could be damaged by widespread pesticide use. Eventually, Carson’s warning led the United States to ban the use of DDT, an agricultural pesticide that threatened birds of prey, including bald eagles, with extinction. By poisoning earth, we poison ourselves, whatever man does to the earth, it is done to him; man is a part of cosmology.

Cosmology is a vast treasure trove of relationships including past, present and future biotic and abiotic elements of the evolutionary universe. Cosmology is our ancestral home and humans belong to this cosmic family where we find our mothers, fathers, brothers and sisters who come in different shapes and sizes. In “The Canticle of the Brother Sun,” Francis shows fraternally communing not only with the abiotic elements of creation, referring them as “Brother Sun, Sister Moon, Sister Water, Brother Air and Sister Earth” but also biotic community as “Brother Wolf and Sister Lamb” has included all life in a single cosmic family, where God becomes the “Abba” and all the rest brothers and sisters.² There is no convincing reason why human beings should be at enmity among

♦**Rayappa A. Kasi**, a Catholic priest and an environmental activist, has authored ten books on ecology and environment. He is an advisor to the Papal Commission for Peace and Justice and Integrity of Creation in Rome and recently he has conducted a seminar on Climate Change in Vatican to the international religious. He has conducted hundreds of seminars, to the younger audience around the world, while attempting to save all life on earth, he appeals to the power of compassion and conservation. His ten books can be downloaded freely from www.planetschaser.com.

¹Quoted in Jennifer Freeman, *Ecology*, New York: Smithsonian, 2007, 119.

²“Canticle of Brother Sun and Sister Moon,” www.catholic.org

themselves or with any part of creation. It would be nature at its most sublime for Homo sapiens, searcher and explorer, to work with the rest of creation in loving and peaceful harmony. Unfortunately, after the ascent of man, everything has changed paving way to cosmic discrimination prompted by human misunderstanding. It caused a rift in cosmic family, due to the self-inflated human hubris called “anthropocentrism,” a schism in cosmogenesis. Cosmogenesis describes the cosmological process of creation. Anthropocentrism has disrupted this process. Cosmogenesis, according to Teilhard de Chardin, “the universe is no longer to be considered a static order, but rather a universe in process. And it is a continuing, upslope trajectory of evolution towards life, consciousness; and the Omega Point.”³

Anthropocentrism has left us with ecological devastation of habitat loss, over-fishing, water depletion, climate change, global warming, air pollution and extinction of plants and animals. Ecologist Edward O. Wilson has said “humanity is now passing through a bottleneck,”⁴ a period of great challenge. There are now so many humans, using so many of the earth’s resources, that humans have the power to alter the very life support systems of our planet. How will a growing population that will reach nine billion souls live and eat without destroying the living planet?

2. Anthropocentrism: A Schism in Cosmogenesis

I doubt people will ever drop the notion that they are superior to all other animals. The theory of anthropocentrism says that the world exists only for humanity. The approach that sees the environment only in terms of what in the environment can benefit humans is called the anthropocentric approach. Believers in this philosophy would say that humans can rightfully try to benefit as much as possible from the cosmology. It pits anthropology versus cosmology, separating man, orphaning him from the rest of creation. Man’s development, man’s salvation, man’s redemption, and man’s future, no doubt, the statement that man is the goal-in-itself of the “development” of everything on our planet has a strong appeal for every human being, because it promised him and his offspring something fascinating, because this idea brings in the top priority and the pivot around which all the rest, all the subordinate, practically usable things should rotate. Such a claim made in the name of large groups of people

³“Teilhard’s Gnosis: Cosmogenesis,” www.bizcharts.com

⁴Edward O. Wilson, *The Diversity of Life*, Boston: Harvard University Press, 1992. www.dhushara.com

will result in “cosmic schism.” In other words, anthropocentrism, if it dominates the mind of a separate person or a group of people, a class, a state, a religion, a nation, or a race will inevitably lead to a certain kind of cosmic disruption, for as much as human needs are contradictory, unpredictable, and frequently unjustifiably enormous. Anthropocentrism is a major concept in the field of environmental ethics and environmental philosophy, where it is often considered to be the root cause of problems created by human interaction with the environment. The emergence of anthropocentrism heralded the death of spirituality, rejected the timeless wisdom of our ancestors who believed that everything in cosmology is built on relationships.

On the other hand, a cosmocentric or a biocentric approach that requires us to give moral consideration to every living thing on the planet would be too broad to be of any practical value, since inevitably certain human requirements will come into conflict with some parts of the environment. In a cosmocentric viewpoint, the goal-in-itself of the development on our planet is the biosphere, not man, i.e., all the living with all its great diversity, which maintains a hardly attainable equilibrium with its environments. Man is merely a part of this great diversity which has been created not by him and therefore does not belong to him and man must bow to it and serve the purpose of its preservation. As Chief Seattle of the Suquamish Indians put it, “This we know: the earth does not belong to man, man belongs to the earth. All things are connected like the blood that unites us all. Man did not weave the web of life and he is merely a strand in it.”⁵ Nothing is so small and unimportant that it has no spirit given by God. The non-anthropocentric approach, conversely, considers the *intrinsic value* in every part of the environment, from the oceans to bacteria. I believe nowadays antropocentrism is going out of fashion. In the Netherlands there is already a political party for animals. Symbiosis is a very important in nature, giving and taking. All we do now is to take and take, and then take some more. Anthropocentric approaches have to retire and cosmocentric approaches have to emerge and it is the beginning of new spirituality or new religion.

To find a way out from this “cosmic schism,” here I intend to discuss some of the appropriate ecological perspectives such as sacred balance, succession, interdependence, carrying capacity of the earth, competitive elimination, cosmic roots, cosmic democracy, climax ecosystem, climate

⁵“Chief Seattle’s Letter to All People,” www.barefootworld.net/seattle.html

change, kingdom of life and self-sacrifice. This article tries to narrow down the rift between cosmology and anthropology. Viewing the natural world through these ecological perspectives, can give humanity another prism through which they can understand how their actions cause global changes, such as climate change, affecting life all over the planet. Understanding these ecological perspectives can help bring humanity through the bottleneck of our enormous population growth while still preserving the integrity of earth's ecosystems. Unfortunately, these lessons are learnt the hard way as the Bible demonstrates in the Book of Job which I have taken as an example to lead our discussion. Also, St. Francis of Assisi, patron saint of ecology can assist us in our attempt to make connection to cosmology from the folly of anthropocentrism.

3. Book of Job: Anthropology versus Cosmology

The book of Job demonstrates the profound human struggle between anthropology and cosmology, between anthropocentric interests and cosmocentric realities. After loss and suffering, Job came to the conclusion that the world is ruled by chance, as Aristotle thought. Job thought only about himself extremely anthropocentric while ignoring the processes that govern the natural world – cosmology. He believed that God could alter natural laws just to heal his sickness. Then in the prophetic revelation that came to him, Job realized that God's providence and governance are mysterious (Job 38-42). It is in the poetic section of the book that we discover that it was only after long and apparently pointless arguments with his unsympathetic visitors that Job turns to God and demands some kind of explanation for the suffering that has inexplicably overwhelmed him. God does respond, but with questions rather than answers, and the questions address the design and operation of the natural world and not the specifics of Job's afflictions. God asks questions about cosmic nature and Job gains insight into human nature. There he testifies to having seen something of God, not merely of the splendour of creation. Job understood that his self imposed anthropocentrism has orphaned him from cosmology and caused him suffering. But his new understanding made him to go cosmocentric, a participant in cosmology.

This breathtaking, even mystical, experience of creation has catapulted Job out of the narrow confines of his infinite anthropocentrism into the vast expanses of cosmic mystery. It has brought him to realize that human history unfolds within the broader context of the natural world, and not the natural world within the parameters of human history, in other

words, cosmology includes anthropology. The shift from an anthropocentric to a cosmocentric worldview requires not only a new way of understanding the universe itself, but also a re-examination of many, if not most, of the tenets of faith and the moral life. Notions such as frugality and sufficiency in our use of natural resources, the viability of human life and the earth’s ability to sustain it will all play indispensable roles in theological thinking. Having called on God to put things right in his particular life, Job was led by the magnitude of creation beyond himself, to see that he could not fathom the laws by which God governs. Job gained wisdom, cosmic conscience and cosmic intelligence. Cosmic conscience is to be aware of the universe and the place of human beings in it. Cosmic intelligence is the capacity to see the cosmos as it is in the light of reason and the manner of being compatible with this vision. The irresponsibility of human self-centeredness will be replaced by a sense of respect and responsible stewardship, and the bottom line of monetary calculation of resources will give way to aesthetic contemplation of natural beauty, a contemplation not unlike that of Job who cried out in awe “I had heard of you by word of mouth, but now my eyes have seen you” (Job 42:5).

As we grow in sensitivity to ecological issues, we might detect in the biblical writings what appears to us to be a disregard of the intrinsic value of the created world. Unfortunately, anthropocentrism dominates the religions and politics. Christian tradition strongly validates and supports this anthropocentric viewpoint in its understanding of the human being as the apex and goal of creation. Eco theologian Dianne Bergent claims that “it’s not just Christianity that has lost its awareness of the importance of creation. This has been part of a broad erosion across religions, at least in the West.”⁶ There is chance for the survival of all life on earth, if we choose to admit the follies of anthropocentrism. We have to dissolve anthropocentrism inside out and go cosmocentric, as Job did. We have learnt in modern science that cosmology is governed by the laws of physics and all things including human beings are subjected to these laws, such awareness is enough to crush down our comfort zones of anthropocentrism. Our survival process gets a head start from examining some of the following ecological perspectives of the natural world, which govern the laws of evolutionary biology. By learning and respecting these laws, we become more complex as species, ecologically intelligent and ecologically conscious.

⁶Dianne Bergent, *God, Creation and Climate Change: The Bible’s Wisdom Tradition and Creation Theology*, New York: Insight Books, 2010, 56.

4. Ecological Perspective of Sacred Balance

In the Book of Job God asked series of questions which brought anthropocentric Job to cosmocentric realization that has enabled him to see the sacred balance in cosmology. They are ironic questions that serve to correct Job's short-sighted perception of his ability to grasp the mysteries of life in general and his own life in particular.

Where were you when I founded the earth? Have you ever in your lifetime commanded the morning and shown the dawn its place? Do you know about the birth of the mountain goats? Do you give the horse his strength, and endow his neck with splendour? (Job 38:4,12; 39: 1,19)

Perhaps the most neglected characteristic of this book is the revelatory significance of nature depicted within it. Nature is not the principal marvel that is showcased here. Rather, it is the awesome God who is manifested through the natural world. The artistry of God can be seen in the splendour of the universe; God's wisdom in its delicate and sacred balance; God's imagination in its diversity; God's providence in its inherent fruitfulness. The natural world was not only born of the creativity of God; it also bears the features of this creativity. Every property of creation mirrors something of the creator.

I am afraid that humans have disrupted the sacred and delicate balance of earth. Natural ecosystems are built on sacred balance that provide many services related to climate air quality, pest control, water flow, and the health of plants and animals. Human activity can threaten ecosystem's ability to perform those services. As the populations of humans in the world expands the sacred balance of earth's surface covered by vegetation with all the services that natural systems provide shrinks. When people build on land without consideration for natural ecosystems, they can cause harm to wildlife and even, ultimately, to human health. Earth capital – the natural resources of the planet – is still undervalued and even considered without value in economic terms. Government subsidies are given for land-damaging activities such as industrial agriculture, clear-cutting in old-growth forests, and grazing cattle on marginal federal lands. These kinds of human activities disrupt the sacred balance and future generations will find it hard to undo the damage we've caused. Humans have to find this sacred balance, the hand of God. "It is not enough to say that creation is the medium through which God is revealed. In a very real sense, the medium is itself the revelation."⁷ Job states this in his final response "now my eyes have seen you" (Job 42:5).

⁷Bergant, *God, Creation and Climate Change*, 56.

5. Ecological Perspective of Succession

Man is the result of 4.5 billion-year story of cosmic succession. Nature is constantly undergoing and recovering from disturbances both small and large. Communities change over time in a process called succession. Fossil records reveal the stories of some of the dominant species who were the result of succession such as trilobites, placoderms, dinosaurs and saber-toothed lions; they are extinct now. Dinosaurs cleared the way for mammals, and at last, man appeared on earth as a result of succession. While primary succession, the development of life in a lifeless landscape, may take thousands or millions of years, secondary succession takes place all the time, over the course of decades, years, or even months. Secondary succession defines the recovery of life after a natural or man-made disturbance to an ecosystem. Secondary succession occurs after a variety of disturbances; after a flood washes away trees and deposits silt, or a fire burns through a swath of forest. In each case the land will recover relatively quickly and in stages. Small, hardy weeds and grasses will spring up first out of the mud or charcoal, to be joined by flowering perennials, sun-loving shrubs, and trees.

Communities are frequently disturbed to varying intensity by storms, rockslides, floods, and other events. When disturbances eliminate some populations or species, the remaining survivors might return or colonizers from adjacent regions could migrate in. Fires are an immensely destructive force. But out of this fiery destruction comes ecosystem rejuvenation. By creating a clearing, fires “reboot” succession, allowing different species to colonize the area. However, human force has been a big obstacle for cosmic succession. Human disturbance fail to “reboot” succession, driving all life to the edge of extinction.⁸ Anthropocentric motives fuelled by greed continue to destroy animal habitats and ecosystems in the name of industrialization and modernization. As humans multiply, more land is required for agriculture and housing, such a demand wipes out even a dream of secondary succession. Our future depends on secondary succession. If man wants to maintain his succession he has to craft his future on the terms of cosmic succession, allowing other species to flourish on which he depends. If he fails to “reboot” secondary succession, primary succession will wipe out humanity from the face of the earth. After millions of years primary succession will give birth to a variety of new species and earth will continue without *Homo sapiens*.

⁸George Ochoa, *Biology*, New York: Harper Collins, 2007, 116-117.

6. Ecological Perspective of Interdependence

The phrase “we are all connected” comes to mind not as sentimental statement, but an ecological truism. Living things rarely exist in isolation. They usually depend on other organisms for many things. Biologically, the interdependence extends further and is particularly noticeable among plants and animals. The interdependence of plants and animals have evolved over millions of years and changed drastically many times. Plants are able to make their own food, but they need the sun’s energy. Plants give off oxygen. Animals including humans breathe in the oxygen and give off carbon dioxide, which the plants require for photosynthesis. Flowering plants depend on bees, birds, and mammals to aid them in reproduction by spreading pollen or dispersing seeds. Herbivores depend on plants for food, and carnivores depend on herbivores for food. In some cases, interdependence can be seen microscopically. All living things on earth are connected by water, air, and or other materials that circulate from one part of the globe to another.⁹

Anthropocentrism has dismissed any notion of interdependence. On the one hand, *Homo economicus* (Economic man), dear to neo-liberal economists, is an under-socialized loner, concerned only with maximizing his/her own preferences in order to become ‘better off.’ On the other hand, *Homo sociologicus* (more familiar as ‘Organization man’) is over-socialized; everything about him is a gift of society. Whether this makes ‘him’ a creature of social norms or a playful postmodernist, ‘he’ is a creature of his circumstances, a born relativist, sharing nothing with the universal family of humankind and cosmic family of nature, and thus incapable of solidarity and kinship with it. Because *Homo economicus* is anthropocentric and *Homo sociologicus* is socio-centric, there is no place in either for transcendence or interdependence.

Seventeenth-century English poet John Donne spoke for humanity when he wrote, “No man is an island.”¹⁰ Outside creation, isolating himself man can never find his existence. Anthropocentrism is isolation. Pope Benedict XVI, in his encyclical “*Caritas in Veritate*” states that “one of the deepest forms of poverty a person can experience is isolation.”¹¹ It is what St. Augustine meant by “our hearts are restless” until we realize the relationships that divine revelation offers us; with father, mother, brother, friends, land, water, air and with the rest of creation. What *Caritas in*

⁹Freeman, *Ecology*, 35.

¹⁰John Donne, “No Man Is an Island,” www.poemhunter.com

¹¹Benedict XVI, “*Caritas in Veritate*” Chapter 6, 53, www.cctx.org

Veritate invites us to do is to sanctify every human encounter with “fraternity” and to extend this to the whole of creation, making it one cosmic family through “relational inclusion.” Interdependence can initiate the process of co-evolution between humans and the natural world. Two different species can develop tightly linked lifestyles, and changes in the other. Co-evolution is a term for this interdependent evolution.¹² A well-known example of co-evolution is the relationship between honeybees and flowers. Co-evolution is an evolutionary success story that has brought us to where we are today. In co-evolution we find our relationships, we find our cosmic family. In this process there is no hierarchy; all are equal partners, brothers and sisters and that is what interdependence is all about!

7. Ecological Perspective of Carrying Capacity of the Earth

Carrying capacity refers to the maximum abundance of a species that can be sustained within a given area of habitat. When a population grows until it gets as large as its habitat is said to have reached its carrying capacity. When an ideal population is at equilibrium with the carrying capacity of its environment, the birth and death rates are equal, and size of the population does not change. Populations larger than the carrying capacity are not sustainable, and will degrade their habitat. A population that reproduces without limits will grow exponentially. That is, the population will grow faster and faster as each generation’s multipliers – two children will produce four grandchildren, eight great grandchildren, and so on. A population that draws its resources faster than they can be replenished naturally is heading for a run-in with the carrying capacity of its habitat. Individuals in a population that has exceeded the carrying capacity of its habitat may have poor health and suffer from malnutrition because of the compromised living conditions. When this happens, the weakest individuals may die, or the population as a whole may become more vulnerable to further environmental stress or disease. Sometimes a large number of individuals in a population die as a result of overshooting the carrying capacity of their habitat. This is known as a die-off.¹³

Carrying capacity can also be damaged by overpopulation, in this case overpopulation of humanity, which leads to excessive exploitation of resources and a degradation of the habitat’s ability to support the species. Human population growth is presenting ecological challenges worldwide. The pressure of a growing human population on earth’s resources also

¹²www.biomed.bown.edu

¹³“To Be Investigated,” www.huffingtonpost.com

makes it more difficult for plants, animals, and other organisms to adapt to climate change. Humans, like all organisms, can only sustain themselves and their populations by having access to the products and services of their environment, including those of other species and ecosystems. Clearly, the cultural evolution of human socio-technological systems has allowed enormous increases to be achieved in carrying capacity for our species. This increased effectiveness of environmental exploitation has allowed a tremendous multiplying of the human population to occur. “In prehistoric times that is, more than 10,000 years ago, all humans were engaged in a primitive hunting and gathering lifestyle, and their global population probably amounted to several million individuals. In the year 2012, because humans have been so adept at increasing the carrying capacity of their environment, more than six and half billion individuals were sustained, and the global population is still increasing.¹⁴ Anthropocentrism is putting pressure on the carrying capacity of the earth. It is a clear conflict between anthropology and cosmology.

As a result, an enormously greater number of earth’s species have not fared as well, having been displaced or made extinct as a consequence of ecological changes associated with the use and management of the environment by humans, especially through loss of their habitat and over harvesting. In general, any increase in the carrying capacity of the environment for one species will negatively affect other species. In addition, there are increasingly powerful indications that the intensity of environmental exploitation required to sustain the large populations of humans and our symbionts is causing important degradations of carrying capacity. Symptoms of this environmental deterioration include the extinction crisis, decreased soil fertility, desertification, deforestation, fishery declines, pollution, and increased competition among nations for scarce resources. Many reputable scientists believe that the sustainable limits of earth’s carrying capacity for the human enterprise may already have been exceeded by couple of billions. This is a worrisome circumstance, especially because it is predicted that there will be additional large increases in the global population of humans. If it is true that the human enterprise has exceeded earth’s carrying capacity for our species, then compensatory adjustments will either have to be made by the human economy, or humanity will face disastrous consequences.

¹⁴“Carrying Capacity of the Earth,” www.science.jrank.org/pages1244

Certain animals and plants have a built-in sense of carrying capacity, so that instead of overshooting and having a die-off, they remain within the limits of their habitat’s ability to support them. Lake trout, for instance, stop breeding as prolifically when the population density increases too dramatically. We can also learn from nature how to stay in line with the carrying capacity of the earth by setting limits to human population growth. Anthropocentric interests have colonized every continent, every ecosystem, and every habitat, in doing so we’ve sidelined all other life. Today’s ecosystem managers realize that in order to be sustainable over time, ecological management has to take into account the needs of all the inhabitants of the land, from humans and teak trees to frogs and soil organisms. Management of the world’s ecosystems will continue to be a great challenge. Understanding the natural carrying capacity and limits of the land is important to designing good management strategies. By the turn of the twenty-second century, there will be 10 billion people on earth and such an explosion of growth can put pressure on food and water resources that will lead, perhaps to the extinction of our own species. Considering and respecting the lessons from the ecological perspective of the carrying capacity of the earth is the valuable reminder to Homo sapiens if he intends to continue his existence in the future.

8. Ecological Perspective of Competitive Elimination

Humans are not exempt from the principles of population biology. Humans are known as “keystone species,” because as top predator they determine ecosystem structure by their eating and living habits.¹⁵ Man is also known as “ecosystem engineer,” an animal with significant effect on its ecosystem. Until the “keystone species” appeared on earth the competition for survival was a fair game. Man is the latest invasive species, a newcomer on planet earth and he invades every nook and cranny, competing with the native life that has appeared before him. Man is one of the biggest threats to biodiversity on the planet. Human settlement is an increasingly common geographic barrier for many species. Before the ascent of man, competition may have contributed to the elimination of several species using the same resources. But now competition is exclusively anthropocentric versus all life on earth. However, now human competition puts a tremendous strain on the planet’s resources. According to the World Watch Institute, in 1997 worldwide harvesting of fish peaked at 100 million tons per year. Similarly, world

¹⁵“Keystone Species,” www.animals.about.com

grain production is peaking at around 1.7 billion tons per year.¹⁶ Meanwhile, the total area of deforestation is equal to the size of the continental Australia. This means fewer croplands for growing food and the extinction of entire species of plants and animals. Some biologists estimate that we might lose a million species to human competition by the end of the century, and as many as a quarter of all species on the earth by the middle of the twenty-first century.

Historically there have actually been three waves of human competition, all of them coinciding with the introduction of new technology and science.

The first human competition began about a million years ago when humans discovered tool making, triggering an increase in world population from a few hundred thousand individuals to 5 million. *The second human competition*, which started about 10,000 years ago, came with the discovery of agriculture and the domestication of animals and plants. This time, the population grew a hundredfold, to about million. *The third human competition* started several hundred years ago with the industrial revolution.¹⁷

The question is: can the world continue to preserve biodiversity when the human competition is still galloping ahead at a rapid pace? Fossil record reveals that competition for food and water was the main cause for the mass extinctions happened in planet's history. When one dominant species had an advantage for survival over another species, they increased their population exponentially until they ran out their resources, unable to feed eventually they all perished. Competitive elimination not only destroyed other organisms, but also destroyed the dominant species. Nature is warning us through the ecological perspective of competitive elimination. Between human and nature competition, apparently man is always the winner. This victory may be a deception when we analyze the long term impacts on our own survival. We may have destroyed our life supporting systems as we pursued our achievements. In our zeal to build and possess, we may lose what we have.

9. Ecological Perspective of Cosmic Roots

Recognizing that all creatures come from the same primordial source who is God our Father and the Father of our Lord Jesus Christ, St. Francis

¹⁶www.worldwatch.org

¹⁷“Cooperation and Competition in Humans and Animals,” www.le.ac.uk/psychology/amc/coocomp.html

related to Christ and all creation as brothers and sisters of the one universal family. Our shared Creator according to Francis is our Father who loves and cares for creation, for each one of us beyond our wildest dreams! No wonder St. Francis is known as a Peacemaker and Patron saint of Ecologists! Love for nature is a “spiritual drive,” as Francis envisioned it. This is known today as “eco-spirituality” that emerges in supporting environment. Many sensitive people in our society are beginning to experience their capacity for this type of merging with nature. We in the cosmos do fall in love with nature. It is about loving everything – all that is. Because we who enjoy participation in more enlightened universe communities are already in the state of love when we are drawn to one another, we cannot help but be in love with every “Being” with whom we enter into a relationship. Still, in each intimate relationship we experience alignments and intensities of feeling that are unique to that union.

Ecology is the study of connectedness, study of relationships. It began its intellectual history as the holistic study of the myriad niches and crannies in which life has taken hold on this planet, but its destiny was to be much greater. It has eventually come to see the entire earth as a remarkable cosmic “niche” intricately connected with the grand hierarchy of systems we call “the universe.” As nature around us unfolds to reveal level upon level of structured complexity, we are coming to see that we inhabit a densely connected ecological universe where nothing is “nothing but” a simple, disconnected, or isolated thing. We now know that the elemental stuff of which we are made was forged in the fiery core of ancient stars. In a very real sense, the ecologist’s “web of life” now spreads out to embrace the most distant galaxies. This magnificent cosmology has led us to the greatest turning point in our understanding of the human place in nature since our ancestors first looked skyward to ponder the wheeling stars.

Another famous perspective is “Gaia Theory,”¹⁸ and it began as a biochemical explanation for the long-term homeostasis of the planetary atmosphere. James Lovelock and Lynn Margulis postulated that “the biota, oceans, atmosphere, and soils are a self-regulating system that plays an active role in preserving the conditions that guarantee the survival of life on Earth.”¹⁹ Their brainchild soon became a major talking point among the Deep Ecologists, some of whom saw it as a compelling statement of the vital connectedness of all living things. While some Deep Ecologists

¹⁸www.gaiatheory.org)

¹⁹“Doors of Perception,” www.museum.doorsofperfection.com

express concern that the global perspective of the hypothesis – the image of the earth as a single superorganism adrift in space – may undercut a sensuous experience of place, others find in it the basis for a quasi-mystical biocentric ethic. More hypothetically, we have the possibility that the self-regulating biosphere “speaks” through the human unconscious, making its voice heard even within the framework of modern urban human culture. But Gaia and her pain is calling us to embrace earth, which needs so much embracing today, and now cosmos as well. We don’t have to abandon our existing theologies, we can incorporate them into this great act of growing our souls; expanding our consciousness.

10. Ecological Perspective of Cosmic Democracy

It is important to emphasize that we human beings are part of the community of creatures, as St. Francis of Assisi understood it. Democracy surely is the highest ideal that historically social coexistence has developed. Unfortunately democracy is confined only to anthropocentric motives. Democracy should be extended to cosmos, also including the well being of whole creation, known as cosmic democracy. Cosmic democracy is the permanent search of equilibrium through the participation of all, equilibrium between man and woman, between human being and nature. Cosmic democracy implies overcoming anthropocentrism: it is not only harmony among humans, but also with the energies of the earth, the sun, the mountains, the waters, the jungles and with God. It is about creation, where all the elements are considered carriers of life and therefore are included in the community, which respects their rights.

For example, St. Francis is telling the brother gardener not to plant vegetables everywhere, but to reserve part of the garden for plants whose scent and flowers might invite all people who looked at them to praise God. Thus, Francis refuses to limit the value of the rest of creation for humanity to its practical usefulness but sees it as consisting also in its assisting humanity’s praise to God. But Francis’s principle was that because “creatures minister to our needs every day,” and “without them we could not live,” therefore we should appreciate them and praise God for them.²⁰ Thus, the theme of human dominion is understood theocentrically rather than anthropocentrically. The creatures’ service of humanity is properly received only as cause for praise and thankfulness to God. Therefore the human dominion over the creatures becomes for Francis primarily a matter of dependence on the creatures with those, humanity

²⁰“Do Animals Have Rights?” www.wonderofcreation.org

shares a common dependence on the Creator. The creatures on whose service we depend are not to be exploited but to be treated with brotherly or sisterly respect and consideration. This means that in Francis the sense in which humanity has been given a superior status in creation is only to be understood in relationship to his overwhelming sense of the common creatureliness that makes all creatures his “sisters” and “brothers.”²¹

Francis regards all the creatures not only animals, but also fire and water, sun and moon, and so on, as brothers and sisters, because they are fellow creatures and fellow members of the family of those who serve God. The terms denote affection and especially affinity. One concept that helped Francis, as a man of the thirteenth century, to understand the relationship of humans and other creatures in terms not of domination but of mutuality was the chivalric notion of “courtesy.” Courtesy is showing politeness and consideration, kindness and respect to others, hence it is a requirement for any democracy. “Courtesy,” said Francis “is one of the qualities of God, who courteously gives His Sun and His rain and everything to the just and to the unjust. And courtesy is a sister of charity. It extinguishes hatred and keeps love alive.”²² Courtesy is the magnanimous, deferential, respectful attitude that enables love to be shown up and down the social hierarchy. In the community of creation, brothers and sisters on different levels of the hierarchy can interact with mutual respect and loving deference. With the chivalric notion of courtesy Francis fused the traditional monastic virtues of obedience and humility, so that he can say that obedience is solidarity with the rest of creation, understood as a theocentric community existing for the praise and service of God.

11. Ecological Perspective of Climax Ecosystem

In a world as crowded as the earth, with so many life forms sharing the same ecosystems, the planet’s inhabitants are bound to get in one another’s way. It is a challenge to make room for all the “interest groups” involved in keeping the ecosystem healthy. As organisms coexist, the soil, plant, fungi, herbivore, and carnivore populations continually adjust. Eventually, ecosystems may reach a state in which the abundance and dispersal of life are relatively stable. These relatively stable ecosystems – though life within them continues to grow and die, evolve and adjust – are called climax ecosystems. Climax ecosystems have a relatively large biodiversity

²¹Leonardo Boff, “Ecology and Liberation: A New Paradigm,” www.findarticles.com

²²“The Brothers and Sisters of Penance of St. Francis,” www.bspenance.org

and as much productivity as the soil and weather can support. An example of a climax ecosystem is the broad leaves forest of Western Ghats in India, a mix of teak, neem and raintree that, if left undisturbed by man, would probably remain a similar forest until the next ice age, or until global warming so changes the temperature and rainfall patterns that new species can dominate the old.

Over the past 10,000 to 15,000 years, a blink in evolutionary time, humans have begun to play an increasingly powerful role in the state of many of the world's climax ecosystems. The fates of many species now depend on our choices. It may seem at times that humans are the only species that really matters in the world. Even though people are only one of 2 million known species, we consume 50 percent of the world's accessible fresh water and an estimated 20 percent of its plant growth annually. Because of human behaviour, more of those species are at risk of being lost now than at any time since the age of the dinosaurs. "Species are going extinct at quite an alarming rate," says conservation biologist Stuart Pimm. "Routinely we have destroyed one natural resource after another."²³ Pimm notes that in the past century, species have been going extinct at a rate 100 to 1,000 times faster than would be expected, considering fossil record. Other periods of rapid extinction have occurred in earth's history, but if a mass extinction is indeed under way, this would be the first caused by a single species, humans. There are 24 climax ecosystems, known as "hot spots" around the world. Hot spots used to constitute nearly 12% of earth's land, but they have been logged and built on and degraded by human populations until they now constitute only 2.3% of earth's land surface.²⁴

Evolutionary biologist Edward O. Wilson notes that every climax ecosystems possess three types of wealth: economic, cultural, and biological. Economic wealth is the measure by which our societies are generally run. Cultural wealth is celebrated in many ways, through art and clothing and marriage rituals, for example. Biological wealth, if recognized at all, is treated as an insignificant part of the background. It does not make any sense, Wilson argues, to value only economic wealth. "Humans should recognize that our lives, as well as those of our descendants and the lives of other species, depend directly on stewardship of the biological wealth of the land."²⁵ Some people believe that putting

²³ www.rambles.net/pimm_nature.html

²⁴ "Projecting Land Use Changes in the Neotropics," www.sciencedirect.com

²⁵ "Conceptual Issues in Evolutionary Biology," www.bioloji.net/upload/phd/epistemologist/4.pdf

economic value on ecosystem misses the point, since our planet’s life and landscapes can never be replaced and are therefore priceless. Instead of price tag, they argue, the concept of stewardship should be our guide. Stewardship means taking care of earth for future generations. Stewardship implies an understanding that each of us is only a temporary passenger on planet earth, and that we have a responsibility, to be mindful of the effects of our actions on future generations. Therefore, protecting climax ecosystems is the best investment for future generations. Destroying these climax ecosystems can lead humanity to dangerous repercussions.

12. Ecological Perspective of Climate Change and Adaptation

Climate influences the ecology of a place by affecting the important physical attributes – water, temperature, sunlight – that determine which organisms can grow and thrive. Gradually, the plants and other organisms adapt to their climate. Over long periods, climates fluctuate. Periods of unusual cold, warmth, rainfall, or drought, if repeated for several years in a row, can have a significant effect on food webs. This is climate variability. If such variability persists over a longer period so that it becomes the norm, it is called climate change. Climate change and variability cause major disruptions for plants and animals which were well adapted to the previous conditions. Organisms that have a hard time adapting to the change may be threatened with extinction if they cannot move. The pressure of a growing human population on earth’s resources also makes it more difficult for plants, animals, and other organisms to adapt to climate change.

Change in earth’s temperature caused by human activities is sometimes called “anthropogenic forcing.”²⁶ Since 1970, more CO₂ has been emitted from human sources than from natural ones. Scientists say the extent of recent warming can only be explained by human-generated carbon in the atmosphere. Population expert Joel Cohen notes that “a population’s environmental impact depends on many things other than natural resources, including how much energy and space each person consumes, social and cultural expectations, infrastructure for moving goods around, and government.”²⁷ When considering how many humans are too many, experts look at the environmental impact of growing human populations.

For instance, about one-third of the world’s population, or 2.7 billion people, currently live in China and India. As economies develop in both countries, standards of living rise. Experts on global warming

²⁶“Climate Change: Anthropogenic Forcing,” www.realclimate.org

²⁷“Top 10 Key Population Trends on Earth,” www.earthsky.org

recognize that these two countries' increasing standards of living, translated into greenhouse gas emissions from cars and power plants, could dramatically increase the current global warming trends.²⁸

Evidently, world climate is currently in a precarious and unstable state, and we can only hope that there are enough negative feedback systems in the global carbon cycle to forestall massive disruptions to global climate.

Certainly there are things our species can do to help tilt the odds in our favour. These can be viewed as the adaptation processes. Reforestation and sustainable forestry are particularly attractive methods for absorbing excess atmospheric carbon dioxide. "Fertilizing the seas with particulate iron and silica to enhance the growth of phytoplankton has been tested as a way to soak up carbon dioxide."²⁹ The world await, however, the clever scientist who can show us how to capture the methane as it escapes from the thawing gas hydrate reservoirs, thus simultaneously protecting the atmosphere from this potent greenhouse gas and providing the world with a huge supply of relatively clean-burning fuel. If the virtual extinction of a group that dominated earth for 180 million years was caused by climate change and the ecological shifts that accompanied it, the lesson for humans is clear: Practices that could lead to climate change, such as emitting large quantities of carbon dioxide into the atmosphere, are a danger to our continued existence. Also, if scientists are able to understand why some rather unlikely species did manage to survive the great extinction 65 million years ago – including cold-blooded species such as frogs and snakes – they might learn lessons relevant to preparing humans for an uncertain future.

13. Ecological Perspective of Kingdom of Life

A Kingdom of life is the Kingdom of God. Kingdom of God is creation itself that includes humans with the rest of creation. Jesus Christ's vision of the Kingdom of God is not "anthropocentric" but "cosmocentric." Biologists commonly classify living things into five kingdoms, or large-scale units: prokaryotes, protists, fungi, plants and animals. The prokaryotes are our invisible brothers and sisters and they differ from organisms of all other kingdoms, known as eukaryotes, in that their cells contain no nucleus. Most prokaryotes are bacteria. Protists are visible brothers and sisters and they are largely defined as single-cell organisms that contain a nucleus. They include plant-like organisms like algae that

²⁸"World Economics and Social Survey 2011," www.un.org

²⁹Mark A. S. McMenamin, "Geology," www.goodreads.com

use photosynthesis. Other family members are known as fungi and they are eukaryotic organisms that digest their food externally. Since they do not use photosynthesis, they are not related to plants. Some commonly known fungi include mushrooms, yeast, and mould. Plants are brothers and sisters in green colour and they are multi-cellular organisms that make up the kingdom plants. Unlike animals, which take in food from living or dead organic matter, plants make their own food through photosynthesis. Animals are our immediate family members and they are multi-cellular organisms that are not plants or fungi. Human beings are classified under the kingdom of animals.

It is easy for humans to feel that we are the central and most important species on earth. After all, it is human faces we see in the mirror each day, humans we love, human communities we inhabit. Looking at species on earth from a numerical point of view, however, a completely different picture emerges. Defined by the number of species on earth, humans, along with all other mammals, are rare indeed. Scientists have described approximately two million species of living organisms. This number includes all manner of life, ranging from bacteria to oak trees to lions.

Of these, almost two-thirds are insects; another quarter million or so are plants. A mere 4,000 known species are mammals. More than 750,000 of the 2 million known species on our planet are insects. The insects, which include beetles, butterflies, ants, and termites, far outnumber their vertebrate cousins. The most common type of insect is the family known as coleopteran, or “sheathed wing” insects – the beetles. There are nearly 300,000 known species of beetle, more than all non-insect animal species combined.³⁰

A story is told about J. B. S. Haldane, a well-known British biologist and evolutionary thinker. Once, Haldane was asked what a person could conclude as to the nature of the Creator from a study of his creation. Haldane is said to have answered, “Creator has an inordinate fondness for beetles.”³¹ This one statement is enough to crush any hope of anthropocentrism.

Hopefully, people will figure out a way to utilize science and technology, combined with a respect for the earth’s life support systems, to engineer a “New Kingdom of God.” For this to succeed, we must understand those support systems and learn more about the planet’s

³⁰“Book News 24/7: Book Daily Genre Sampler: Nature,” www.wyld-about-books.blogspot.com

³¹www.quoteinvestigator.com

biodiversity and ecology, many aspects of which are still poorly understood. Ecologists say we know more about how many stars are in the universe than how many species live on earth. There is a lot to learn. Some things we know: As humans test limits of how far we can stretch water and land resources without creating environmental disasters, all life forms will pay the heaviest price. We cannot know precisely where the dangers lie if we push the ecological envelope. Scientists' best recommendation is that people adopt a cautious, respectful approach to how the world's resources are used. Above all we should find the Spirit of God in every element of creation, as it was demonstrated in the book of Job. Ecologists like to point out that wilderness is the soul of hope. It is the spirit of opportunity and freedom. It is to be hoped that the future world will be one in which this spirit survives.

14. Ecological Perspective of Self-Sacrifice

Anthropocentrism is about selfishness. Cosmology is about sacrifice. Sacrifice is the law of creation, manifestation, life and love. It is at the root of the idea of cosmogenesis. Planet earth is about sacrifice, it's a Eucharistic planet. "Take it and eat it, this is my body," the words pronounced by Jesus Christ at the institution of Eucharist, is the ultimate symbol of self-sacrifice. In the same way, minerals sacrifice to evolve vegetable kingdom, pronouncing the same words "Take it and eat it, this is my body." Vegetables sacrifice to create animal kingdom, pronouncing the same words "Take it and eat it, this is my body." The animals sacrifice to create human kingdom, pronouncing the same words, "Take it and eat it, this is my body." Eucharistic worship is at the heart of cosmos and earth becomes a Eucharistic table on which this timeless drama is enacted, every second. The cross in Christianity is symbolical of sacrifice. Christ's teaching, when viewed from the esoteric point of view, is nothing but "oneness with God and creation," through self-sacrifice, love, and life.

Many animals do in fact display self-sacrificing behaviour. In colonies of army ants, thousands of individuals toil their whole lives for the sake of the queen, with little chance of themselves reproducing. Generally, only the queen's genetic material is passed on to the next generation. Honeybees separately evolved a similar social arrangement and have a similar, self-sacrificing social structure in which most individuals never reproduce themselves toiling instead on behalf of a related queen. The ultimate story of self-sacrifice is about a fish called salmon. The return of the salmon from the salt water to fresh water to

spawn and die, serve to remind us of Jesus’ sacrificial death upon the cross for all people. It speaks to us of the promise of new life to all.³² Guided by a keen sense of smell, the survivors travel to their original hatching grounds, where they breed, spawn and die in a short space of time. Females lay eggs, males spawn and both die. They lay next to their eggs and after couple of months, promise of new life comes out of eggs and the young are nourished by the decaying bodies of their parents. Salmon are honoured and celebrated by all coastal peoples; the fish serves as a powerful symbol of regeneration, self-sacrifice and perseverance.

Indigenous cultures celebrate the gift of salmon as food, ecosystem nutrient and symbol of the eternal truth of Christ’s great love that continues to feed our souls. In the same way, God is also pointing out to us the beauty of sacrifice. Life can’t always be about me, me, and me. But perhaps God is emphasizing something. He makes these salmon fishes go through such extremes to breed new life, and gives them the instinctive desire to do so. They work hard to get there, and may even lose their lives doing so, but they understand that their time has come, and that it is for a greater purpose. And that says the same for us humans. The ecological perspective of sacrifice is an invitation to humans to learn that sacrifice is about two ways, “give and take.” Man is accustomed to take, take and take; such a trend has brought us empty oceans, empty mines and empty ecosystems. If we want ecological sustainability, man has to learn to give, give and give, by pronouncing “Take it and eat it, this is my body.” Our future should be built on self-sacrifice. If there’s one thing I learned from salmon, it is to treasure lives, and not just mine, not anthropocentric but biocentric.

15. Conclusion

Although most people think that the primary focus of the book of Job is the question of innocent suffering, a careful reading of the speeches of God shows that Job’s suffering was merely the occasion for a radical shift in his point of view. His suffering certainly caused him great distress, but even more so did his inability to understand why he was suffering. And what did he learn from God’s questioning? That God is not only in charge of the wonders of creation, but that those wonders are held within the balance and harmony of divine providence. Furthermore, human beings are unable to grasp the scope of this providence, a cosmocentric reality. Job had to readjust his view of human capability from anthropocentric interests to cosmocentric realities. In the age in which we live, an age of

³²“The Great Sacrifice of Salmon,” www.burpandslurp.com

great accomplishment and promise, we would do well to consider the lesson about the limitations of human nature that Job learned. It is a lesson that seems learned only the hard way, through failure or suffering, for we really only discover our limits when we are up against them. Still, many today not only fail to recognize human limits, but they do not even seem to be conscious of the fact that we have limits. Perhaps we should think more along the lines of Job's thought: "I have dealt with great things I do not understand; things too wonderful for me, which I cannot know ... I disown what I have said, and repent in dust and ashes" (Job 42:3, 6).

As we have seen in our discussion on ecological perspectives, it is inner spirituality, connectedness to all creatures, call for preservation and conservation that enables man to connect with cosmology. Without animals and plants, our place would resemble hellish. The same breath of God would give rise to humans, is present in all animal and plant kingdoms. Equipped with this awareness, religion and science should slowly make a shift from the anthropocentric motives to cosmocentric interests, should play a bigger role in saving life and preserving nature. Religion is a powerful tool that could bring in the reversal of such a shift. Religion gives value and credibility to philosophies and assumptions. Our "spirit-spirit," or anthropocentric and cosmocentric relationships are not only extrinsically meaningful they are intrinsically valuable for they connect us to other persons and to the Transcendent. As Martin Buber nicely puts it: "As soon as we touch a You we are touched by a breath of eternal life ... the lines of relationships intersect in the Eternal You."³³ The crux of the matter is that regardless of our origins and purpose we are destroying the ecosystem in which we live because we have a false belief that we do not actually live here. We do not, however, eat angel food. We belong to the food chain. We must accept our place here. The rest of nature has a right to live and to flourish. It is not acceptable that we consume all the world's resources in order to create more humans. We are wonderful and glorious creatures, but so is every other creature. We may or may not be the creature with the highest consciousness and we may or may not be the only creature made in God's image, but it is not our place to deny other creatures the right to life.

³³ "The Holiness of Relationships," www.templeisaiah.com/holiness-relationships.