THE PLANET EARTH, MY CHANGING CLIMATE AND ME: A METACOSMOENVIRONMENTAL NEW LOOK

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Abstract

The Earth is not just a dead planet, which contains a valuable closed system. It is herself alive. I suggest here that she has her own serene ecological balance, her own will to live. She is capable of preserving her own existence. She can shrug off disturbing intrusions, whether from comets or from human beings. She is capable of counter reacting and redressing herself in self defence. Like any other species, she has her natural term; she lives and may be sick to the point of possible coma, and even though a Superorganism, may die.[1]

From the above pictures of our planet, our nature and us, I maintain that human life is an integral part of the natural order of the Earth's biosphere. We thus conceive of the place of humans in the system of nature in the same way we conceive of the place of other species. There is a common relationship to the Earth that we share with wild animals and plants. Full awareness of this common relationship gives us a sense of true community with them, a fact that is rooted to the fundamental feature of our existence. Therefore, as far as our relation to the Earth's ecosystems is concerned, we see ourselves as but one species-population among many in an active and living system. Thus, we keep in the forefront of our consciousness the characteristics we share with all forms of life on Earth. The life and being of each being is very vital and contributively to the life and being of the planet Earth.

Key Words: Ecosystem; Changing Climate; Superorganism, Ecobeing

Introduction

The universe we live in is quite dynamic and changing. It was created or born and could die. Everything in the universe, including the Sun and the stars, has its own life cycle. Nothing except God is believed to be eternal. One might think that this is the most natural and obvious way for things to be. After all, we are living creatures, and are used to the cycle of birth, life and death which we see all around us on the planet we call Earth. At the beginning of the 1920s, astronomers were only just beginning to comprehend that the stars we can see in the sky represent only a tiny fraction of the universe. With the aid of new telescopes, they discovered that the entire Milky Way system, which is made up of perhaps a hundred billion stars, each more or less like our Sun, is just one island in space, a galaxy. Beyond the Milky Way there are millions of other galaxies, appearing as no more than a fuzzy blob of light even with the aid of the best telescopes on Earth, and may

[1] John I. Okoro, *The Earth as Living Superorganism: from the Scientific Gaia Hypothesis to the Metaphysics of Nature* (Hamburg: Peter Lang Pub. 2005), 23-24

contain as many individual stars as our own local Galaxy, the Milky Way. All these undergo the process of becoming, being, and passing away.

The Universe as Gigantic Spatio-Temporal Whole

The Universe itself for Gribbin is some 15 billion years old. For comparison, our Solar System, including the Earth and the Sun itself, is a little less than 5 billion years old, and has been around for roughly one-third of the Universe so far.[2] To both scientists and philosophers, the night sky has remained as beautiful as ever. As we understand more and deeper about the universe, our nature and our being, philosopher's and scientist's sense of wonder have not diminished but rather became sharper, more narrowly focussed on the mysteries that remain. The stars that we could see without the telescope are now not so mysterious because massive computer codes simulate the nuclear reactions at the star's cores and follow the flow of energy by convection and radiation to their visible surfaces, explaining both their present appearance and how they have evolved, that is their structure and evolution. Many mysteries are still left such as what kind of matter are galaxies and galactic clusters made? How did the stars, planets and galaxies form? How widespread in the universe are habitats suitable for life? How did the earth's oceans, geosphere, hydrosphere, biosphere, atmosphere, noosphere and lithosphere form? How did life start? What are the relations of cause and effect between the evolution of life and the terrestrial environment in which it has occurred? How large is the role of chance in the origin of human species? How do human institutions respond to environmental and technological change?

The universe contains not only the Earth and everything on it, but also the Moon, the Sun and other planets of the Solar System. There are many such suns and planetary systems. They form galaxies of stars. Our Solar System, for example, is a member of the Milky Way galaxy. In fact, the galaxies form even larger clusters of galaxies. Among the stars, there are red giants, exploding novas, white dwarfs, and neutron stars. Again, the universe is one gigantic spatio-temporal whole,[3] consisting of elementary particles and all of their configurations. It is again estimated that it is about ten billion light years in diameter and that it has existed for about eight to thirteen billion years, probably close to what Gribbin said.

We have remained far from providing an answer to some of these questions, except on what our faith and belief, science and technology till date have provided and limited us to. These unanswered questions have remained problems and mysteries to us since we are yet to explain some of them accurately based on what we already know. Yes, we can only explain scientific observables by a scientific principle for instance, outside which we rely on the laws of nature and historical components to enable us deal with life and our nature.

[2] J. Gribbin, *In the Beginning: The Birth of the Universe* (England, Penguin Books,1993), 13.
[3] R. Grossman, *The Existence of the World: An Introduction to Ontology* (London: Routledge, 1992), 8.

The Planet Earth

The Earth is the third planet in distance outward from the Sun. it is at present. at least to modern science, known to be the only planetary body in the Solar System that has conditions suitable for life. Differently, the reality Universe or the Cosmos implies the totality of matter and energy in existence. It consists of all the existing atoms. Atoms. in turn. combine into molecules. and these molecules make up the things around us. This is to say for example, our bodies. the plants and animals on Earth, the mountains and rivers.[4]

Earth's Atmosphere – World's Largest Cell Membrane

The extraordinary extent to which living things in our planet cooperate to their mutual benefit is clear when we look in detail at the structure of a typical eukaryotic cell. Such cells may be small, but do not make the mistake of thinking that small means simple. There is so much activity going on inside them, with different parts of the cell specialized for different job. that one of the closest analogies you could make would be with a city. In a city. there will be power-station that provide the energy needed to keep the community running (and in a modern city some of the power might come directly from sunlight); there will be a "nerve centre", at city hall, which provide the instructions to operate the various systems of the city. including transportation and refuse disposal; there will be ways to bring raw materials. including food and fuel, into the city, and ways to get waste-products out again.[5]

If we echo the way in which the cells of our bodies are made up, that is, of the descendants of separate, free-living organisms that learned to work together, so our bodies are themselves. of course, made up of thousands of billions of cells. There are about a thousand times many cells in your body as there are stars in a typical galaxy like our Milky Way. And each of those cells depends absolutely on the presence of plasmids. doing the work of photosynthesis – even though those plasmids are not in the cells of your body but in the cells of plants. growing on the land surface of the Earth and in the upper layer of the oceans.

Thinking along this line makes it clear to us that the complex tapestry of life on Earth cannot be unravelled, but has to be taken as a whole. Animals have evolved to make use of what plants regard as a waste product of photosynthesis – excess oxygen, discarded into the atmosphere; plants have evolved to make use of, for example, insects in pollination to help their own reproduction. The earth's atmosphere could be seen as the world's largest cell membrane because of the way in which all of life on Earth is interdependent and interconnected in a way reminiscent of the way in which the four

[4] J. Okoro, *The Earth as a Living Superorganism* 19.
[5] J. Okoro, "Living in a Complex Living Planet", in *Philosophical Writings*, ed. Umezinwa, C. (Nsukka: Afro-Orbis pub. Co., 2012). 218-228.

components of a modern eukaryotic cell are interdependent. This therefore makes the Earth behave like a large single living creature, especially when extraterrestrially viewed from space.[6] The atmosphere of Mars for instance, contains chemicals bound up in compounds with very low energy, very similar to the exhaust gases from an internal combustion engine. By contrast, the atmosphere of the Earth contains a mixture of gases in a very high energy state. This, according to Gribbin, means that they can easily react with one another, and with material on the surface of the Earth, to release energy and to produce low-energy compounds. Oxygen in the air, for example, ought, according to simple chemistry, to react vigorously with wood, burning the wood to make carbon dioxide. Oxygen is a high-energy substance, carbon dioxide is a low-energy substance, and, just like water running downhill, simple chemical reactions always seek out the lowest energy.[7]

The above is an example of the second law of thermodynamics, regarded as the most fundamental law in all science. The second law says that things wear out. The Sun, for example, is converting a high energy form of matter, hydrogen, into a form with lower energy, helium, and pouring the energy thus liberated out into the Universe as it does so. One day, the Sun will have used up all of its nuclear fuel, and will become cold, burnt-out cinder. This demonstrates the most fundamental version of the second law – heat always flows from a hot object to a cool object, never the other way. Drop an ice-cube into a cup of coffee, and heat flows from the coffee into the ice-cube; the ice melts, and the coffee gets colder. Heat never flows from the ice-cube into the coffee, making the ice even colder and the coffee even hotter.[8]

Human activities, and life processes in general, can reverse this natural order of things on a small scale, but only at the expense of energy stolen from outside. It takes an input of energy to make an ice-cube, for example. Similarly, photosynthesis breaks apart carbon and oxygen in carbon dioxide, and releases the oxygen into the air, but with the aid of solar energy. This is like making water run uphill by using energy from outside – perhaps from an electric pump. But the energy you put in to raise water will always be less than the energy you get back – perhaps by making water turn a wheel to run a dynamo when you let the water run downhill again. Gribbin adds that plants get the energy for photosynthesis from sunlight, but the energy released when the carbon and oxygen formed in this way burn again to make carbon dioxide will always be less than the energy used to break the carbon dioxide molecules apart.

[6] See J. Lovelock, *Gaia: A New Look at Life on Earth* (New York: Oxford University Press, 1987). Lovelock published another work on Gaia. See J.E. Lovelock, *The Ages of Gaia: A biography of Our Living Earth* (New York: Bantam Books, 1990). See also John I. Okoro, *The Earth as a Living Superorganism: from the Scientific Gaia Hypothesis to the Metaphysics of Nature* (Hamburg: Peter Lang Pub. 2005)

[7] J. Gribbin, 119

[8] *Ibid.*, 119.

The Earth Must Have Life

In the normal course of events without life, the best guess is that the Earth's atmosphere would consist almost entirely of carbon dioxide (CO_2), like the atmospheres of Earth's sister planets, Mars and Venus. In fact, however, our atmosphere contains 78% nitrogen, 21% oxygen, and next to no CO_2 at all. Even Earth's oceans depart dramatically from their expected composition in a lifeless world. These departures from chemical equilibrium must be attributed to the complex and interactive processes of living being: life announces itself by radical local reversals of entropy.[9] Not only have the atmosphere and the oceans been transformed by life; life maintains the transformed environment in a steady state. Analysis of sedimentary rocks show that for the past three and a half billion years the Earth has maintained an almost entirely constant and hospitable temperature range the oceans never boiled or froze, and even the Ice Ages affected only 30% of the earth?s surface. During those billions of years, however, the Sun's output of energy has increased at least 30%, and there have been regular perturbation in the earth?s orbit, volcanic eruptions etc., which have also changed the energy inputs to the Earth. As a result, powerful homeostatic processes must have been at work to keep temperature so constant: adjustments in the "greenhouse gases" (CO_2 and ammonia), changes in the albedo (reflectivity) of the surface seems to have been regulated by biological processes. Likewise, the albedo of the surface seems to have been drastically altered, and quickly adjusted, by changes in the amount, type, and/or colour of vegetation.

The entire range of living matter on Earth, from whales to viruses, and from oaks to algae, could be regarded as constituting a single living entity, capable of manipulating the Earth?s atmosphere to suit its overall needs and endowed with faculties and powers far beyond those of its constituent parts. The Earth is not only alive, but awake, and not set over against us, but, perhaps, constituted in her very awareness by us.

Life on our planet Earth is intimately bound to the physical world for three essential needs, as a medium for life processes; energy, to drive the life processes; and chemical nutrients (carbon, nitrogen, oxygen, and others), which form the substance of life. Energy on Earth exists in many forms – light, heat, the bonds between atoms in compounds, the forces that holds atoms together, and so on, and all of these forms are interconvertible. Life processes are based upon the conversion of energy among various forms. Organisms like machines, are designed to perform work, to convert one form of energy into another structure.[10] When we are active, the energy in the chemical ties in the food we eat is released and converted into the energy of motion. Not all energy conversion performs useful work; some energy is inevitably wasted by the organism in an unusable form; particularly heat.[10] However, we believe that all processes on every scale and on

[9] Weston, A., "Forms of Gaian Ethics", *Environmental Ethics*, 9 (1987):217-230. See also J.I. Okoro, *The Earth as a Living Superorganism*, 107-108.
[10] See Ricklefs, R. E., *Ecology*, (Lagos:Thomas Nelson and Sons Ltd., 1973), 8ff.

every level are transformation of energy. Human being is certainly concerned in the transformation of energy both as generator – that is a producer of higher energies, and as an engine – that is, an instrument for converting energy into work.

The fact that the planet Earth has an atmosphere rich in oxygen, full of chemical potential energy and highly reactive, is a sign that something out of ordinary, in general term, is happening on our planet. If the atmosphere of Mars resembles exhaust gases from an internal combustion engine, the atmosphere of the Earth resembles the mixture of gases that goes into such an engine. It is in fact, and in large measure. This is however possible because plants can steal energy from the Sun. overall, taking the Sun and the planets of the solar system together, the second law of thermodynamics is not violated; and things are indeed wearing out. This is sometimes described in terms of a quantity called entropy, which increases as systems run down towards equilibrium; the entropy of the Solar System as a whole is increasing, as the entropy of the Universe as a whole. So a guest from another star, entering our Solar System, could use a simple spectroscope to explore the atmosphere of the planets, and wind up that while Venus and Mars, which both have carbon dioxide atmospheres, do not have life, Earth, with its oxygen-rich atmosphere, must have and is alive.[11] It is life that controls the environment of the earth and maintains the conditions suitable for life, even in the face of changing outside influences – such as changes in the heat output from the Sun itself. Like the eukaryotic cell described above, the Earth behaves like a single living organism, and has remained warm thousands of millions of years ago when the sun was young and relatively cool and faint; a behaviour that beats the puzzle that has long concerned geologists, astronomers and biologists alike.

Reconsidering our Attitude Towards our Nature

The global environmental changes have been signalling for a change of human beings in her relationship towards our planet Earth and nature. A natural contract as suggested by Michel Serres ought to be negotiated between the Earth and its inhabitants. World history is often referred to as the story of human conflict. History, according to Serres, must now include the violence perpetrated upon the Earth and the violence the Earth posses to human life in response.[12] Just as a social contract once brought order to human relations, a natural contract with the Earth is necessary to establish balance and reciprocity in our relationships with the planet that gives us energy and life in abundances in different ways. Our survival depends on the extent to which humans join together and act globally on a planet described so far as an entity. The place of human beings with the hierarchically structured Earth should not be seen as ever predominant. The Earth is not just a dead planet, which contains a valuable closed system. It is herself alive. It has her own serene ecological balance, her own will to live. She is capable of preserving her own

[11] Okoro, J. I., *The Earth as a Living Superorganism*, 415

[12] M. Serres, *Retour au Contrat Naturel* (France: Bibliotheque nationale de France, 200), 1. See also Id. *The Natural Contract*, trans. E. MacArthur & W. Paulson, (USA: The University of Michigan Press, 1995)

existence. She can shrug off disturbing intrusions, whether from comets or from human beings. She is capable of counter reacting and redressing herself in self defence. Like any other species, she has her natural term; she lives and may be sick to the point of possible coma, even though a Superorganism, may die.[13]

It is indeed important to establish a much ignored philosophical link between ontology and ecological being, call it an ecobeing. This will defend the view that the nobility of each thing depends on the greater nobility of the entire universe. Thus, the universe, made up of both spiritual and corporeal creatures is a being in her own right, ontologically, spiritually and morally. There is hierarchy in and of beings. The hierarchy of things in the universe is not meritorious because according to Aquinas, inequality found in either natural things, or among things has no humiliation of any creature as its primary aim. It rather demonstrates the justice of God because there is fundamentally no injustice in God.

From the above pictures of our planet, our nature and us, we see human life as an integral part of the natural order of the Earth's biosphere. We thus conceive of the place of humans in the system of nature in the same way we conceive of the place of other species. There is a common relationship to the Earth that we share with wild animals and plants. Full awareness of this common relationship gives us a sense of true community with them, a fact that is rooted to the fundamental feature of our existence. Therefore, as far as our relation to the Earth's ecosystems is concerned, we see ourselves as but one species-population among many in an active and living system. Thus, we keep in the forefront of our consciousness the characteristics we share with all forms of life on Earth. The life and being of each being is very vital and contributively to the life and being of the planet Earth.

Not only is our common origin in one creational or evolutionary process fully to be acknowledge, but also the common environmental circumstances that surround us all. We view ourselves as one with them, not as set apart from them. When all said and done, we can then claim that we are ready to affirm our fellowship with them as equal members of the whole community of life on Earth that is active and alive, and eventually held together by that same flow of energy, which vivifies the Earth. The biosphere has operated, as does a living organism, modifying her own environment and so maintaining conditions suitable for her own survival.

When we think of ecological survival, maintenance and preservation, we think of the nature that houses the human and other beings. I see nature as what ought to be admired and cared for as one would admire and care for one's own body. Animals equally do the same, both domestic and wild ones naturally does that. With our conscience, we appreciate the beauties of nature and desire our natural environment to be in good repair

[13] Okoro, J. I., *The Earth as Living Superorganism*, 23-24.

like our bodies, humans channel more of their scientific and technological progresses towards a project of repairing and maintaining the already so much exploited nature. Our nature is bigger than we are, and if our nature suffers, we suffer too. Eventually, if we suffer now, what will be the fate of the future generation?

Intelligent Beings as Earth's Consciousness

Except for Democritus and later Atomists, the notion that the world is a living organism was the dominant Western view until modern times. Although the doctrine of the *anima mundi (world soul or the soul of the world)* was relegated to the intellectual twilight at the beginning of the eighteenth century,[14] nevertheless, the view remained alive in various forms and was often used in criticisms of the emerging mechanical philosophy.

Even though the universal organismic-pantheistic view was already being modified in anthropocentric terms during classical Greek times, we still find in Plato's *Timaeus* the doctrine that a soul had been diffused throughout the body of the world by the Demiurge. Wherefore, using the language of probability, we say that the world became a living creature endowed with soul and intelligence. The modern Christian version of the world soul, which regards the universe as continuous and interrelated; and ourselves as part of nature allows us to assert that the intelligent beings are the consciousness of the world. This implies that the Earth as a psychosomatic entity, its psyche, extending from the biosphere, is principally concentrated in human beings; making us the Earth's consciousness. This makes the human part of the Earth's ecosystems a vital organ, which contributes and participates immensely to the realization of the being and the life of the being of the Mother Earth.

Recently, New Age technologists have been directly or indirectly subscribing to the idea of Gaia (the Mother Earth as organism) as a scientific hypothesis. Following this hypothesis by James Lovelock which I metaphysically examined, we see that we the intelligent beings are providers of eyes and ears, and above all, the vital organ of intelligence of the Mother Earth – Gaia. Though we are privileged to have the possibilities, means and ways to exploit her secrets, the intelligent being that we are seem naturally faced with the responsibility to seize the tiller of the aimed or aimlessly drifting planet. This calls for a reasonable approach to the management and control of the ecosystems, the direction of the evolutionary process, and technologically, to remodel the planet to human specifications as long as we are careful not to damage seriously the other Gaia's vital organs found somewhere else.

Concentration of Carbon Dioxide in our Atmosphere

The burning of fossil fuels and the destruction of forests has increased concentrations of CO_2 in the atmosphere by 40 per cent since the beginning of the

[14] Bonatazi, C., *The Soul of the World: An Account of the Inwardness of Things* (Md. USA: University Press of America, 1978), ix

industrial revolution in the 18th century, reaching 381 part per million (ppm) in 2005. Carbon dioxide is a natural component of the atmosphere and vital to life on Earth. It is one of the Greenhouse gases that act like a blanket to trap heat in the atmosphere and keep the Earth warmer than it would otherwise be. The other main greenhouse gases (GHG) are water vapour, methane, nitrous oxide, halocarbons and other industrial gases, together comprising less than 1 per cent of the atmosphere. All occur naturally, except for some man-made halocarbons and other gases, creating a natural greenhouse effect that keeps the average surface temperature for the planet at about 15 degrees C. without the thermal benefits of GHG blanket, average temperature would be a frigid 18 degrees C and life could not exist as we know it. The well being of humanity therefore depends on the greenhouse effect. However, while our use of fossil fuels and intensification of land use has created great benefits, particularly in the industrialized world, we must contend with the cost of increasing GHG concentrations, which is an enhanced greenhouse effect with great dangers for humanity and the ecology of the Earth.

And the Globe Warms and the Earth Climate Changes

The enhanced greenhouse effect is changing the energy budget of the Earth, leading to warming of the atmosphere and driving climate change. Without enhancement, solar radiation from the sun is balanced by outgoing terrestrial long-wave radiation emitted into space and the climate is approximately stable, although of course variable. With increasing concentration of GHGs, however, the atmosphere becomes slightly more opaque to long-wave radiation and more heat is retained. GHG emission to date, have increased the amount of solar energy trapped in the atmosphere by roughly 1 per cent. This according to Smith appears small but is sufficient to set the processes of global warming and climate change.[15]

The various GHG have differing potential to cause warming because of differences in their effectiveness at trapping terrestrial radiation and the lifetimes in the atmosphere for example, emission of a kilogram of methane would contribute 23 times more warming than CO_2 over a century according to IPCC[16] report. Methane is thus a more powerful GHG, but because the amounts of CO_2 emitted have been much larger, CO_2 has much higher impact on warming. Similarly, many of the halocarbons and industrial gases have very high warming potential, but low relative emissions and therefore less effect than CO_2. Fossil fuel burning has caused about 75 per cent of the increase in atmospheric CO_2 concentrations like already stated, since pre industrial time and conversion of forests to other land uses has caused most of the remaining 25 per cent. Concentrations of methane have more than doubled with about half of emission from anthropogenic sources such as cattle, landfills, rice production and the extraction, transportation and combustion of fossil

[15] D. M. Smith, , *Just One Planet: Poverty, Justice and Climate Change* (UK: intermediate Technology Pub, 2006)

[16] IPCC (Inter-governmental Panel on Climate Change), *Climate change 2001: The Scientific Basis Technical Summary*, Geneva 2001. IPCC has been responsible for global coordination of assessments of climate change. It has led the development of a set of future GHG emission scenarios that are used by climate modellers around the world in preparing climate change projections.

fuels. Nitrous oxide concentrations have increased by about 17 per cent, with anthropogenic sources including combustion, industry and use of nitrogen fertilizers accounting for about a third of emissions. Overall, CO_2 contributes about 60 per cent of total warming by the enhanced greenhouse effect, methane about 20 per cent, nitrous oxide about 6 per cent, and halocarbons and other gases about 14 per cent.[17]

Global average temperature increased by about 0.5 degree C in the period after 1950. 2005 was the warmest year in the instrumented record, followed by 1998, 2002, 2003 and 2004. And the 1990s were likely the warmest decade of the millennium. Looking forward into the 21st century, the global average temperature is projected to rise by between 1.4 and 5.8 degrees C by 2100, a rate of warming that is very likely without precedent in the last 10,000 years. Warming will not be uniform, but will be most rapid for high-latitude northern regions and higher than the global average for most land masses.

Conclusion

Over the past decade or so, rapid improvements in monitoring and measuring over large areas have led to many advances in our understanding of global ecology. The activities induce fluxes of carbon, nitrogen, phosphorus, and sulphur at magnitudes similar to those of the natural cycles of these elements. The most important influences arise from the burning of fossil fuels, which may double atmospheric carbon dioxide over this century and further increase emissions of nitrogen oxides and sulphur, the expansion of agriculture and forestry with widespread use of nitrogen and phosphorous fertilizers; and increased exploitation of freshwater for irrigation in agriculture and industry and waste disposal. Protracted chemical disequilibria have characterized the history of the Earth's atmosphere. and the combined activities of life on Earth have been responsible for perpetuation of these disequilibria. The Earth naturally plays its cycles and auto-regulates herself. Human activities are additional burden on the auto-regulatory mechanism, which when too heavy on the planet causes reactions that could be uncomfortable to the entire system. The problem continues if nothing radical is done to control the emissions.

The amount of projected warming depends on the emissions scenarios used in climate simulation and actual warming will be determined principally by the rate of increase in GHG concentrations. The lower the levels at which CO_2 and GHG concentrations are stabilized, the lower the eventual total change in temperature. To limit global temperature increase to 2 degrees C, CO_2 concentration will have to stabilize at about 450ppm.

If the voices of future generation could be heard, they would plead for action on climate change. The unborn children for tomorrow will bear the heavy burden of our

[17] M. Munasinghe, & R. Swart, *Primer on Climate Change and Sustainable Development* (Cambridge: Cambridge: Cambridge University Press, 2005)

indifference. Evidence that both carbon dioxide and methane are continuously emitted and are increasing is there.[18] More frequent extreme weather is reported from different geo locations of the world. The glaciers are disappearing, Melting Artic Sea Ice and Melting Antarctic Sea Ice, Greenland's Ice Sheet Melting, Tropical Disease Spreading; Oceans warming with Coral Bleaching and disintegration are all subjects of great concern. Climate change has always happened in the history of the world, it is now happening, and will, and can always happen and result to warming of the globe. We must therefore do much to prevent our human and other species of the ecosystem from the frightening dangers cum negative effects of natural changes, which do not consider us in its adjusting and readjusting auto-regulatory activity.

Without actions on our part therefore, the levels of atmospheric carbon dioxide will more than double pre-industrial levels by the end of this century. Our governments must move from political to the practical.[19] The scientist who holds to a fundamentally mechanistic view of the natural world must suspend his or her sensory participation with things. He/she strives to picture the world from the view point of an external spectator. He/she conceives of the Earth as a system of objective relations laid out before his gaze, but he does not include the gaze, his/her own seeing, within the system. Denying his/her sensory involvement in that which he seeks to understand, he/she is left with a purely mental relation to what is only an abstract image.

I suggest therefore that there ought to be a mature science – a science that seeks not to control the world but to participate with the world, not to operate upon nature, but to co-operate with nature. If the chemical composition of the air that we are breathing is being sensitively monitored and maintained by the sum of all of the Earth's biota acting in concert, as a single, coherent, autopoietic[20] or living system, then the material world that surrounds us is not, in any sense, inert or inanimate. Nor are these insects, these trees or even these boulders entirely passive and inert. For materially, nature can no longer be perceived as a collection of detachable working parts -- it is not a created machine but rather a vast, self-generative, living physiology, open and responsive to changing circumstances as hot, warm, cool and cold. It is in short an entity. A Living Superbeing, a Living Superorganism.

[18] Okoro, J. I., *Green Angel: Global Warming and Alternative Energy. A Euro-American Thought for Africa.* (Abuja: Ugwu Press, 2011), 25.

[19] *Ibid*,121.

[20] F.J. Verela, H.J. Maturana & R. Ulribe "Autopoieses: The Organisation of Living systems, its Characterization and a model", in *Biosystems*, 5 (1974): 157-96. Autopoiesis is a definition of life as self-producing. That there is no separation between producer and product in a living-being. See also E.Sahtouris, *The Gaian Controversy: a Case for the Earth as an Evolving Organism*, in *Gaia in Action: Science of the Living Earth*, ed. Bunyard, P. (Britain: Floris Books, 1996), 324-338.

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