

Earth: The Grandeurs of Planetary Environment

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Abstract: The grandeurs of the Earth as a habitable planet lies in (a); Its astronomical position in the Goldilocks' Belt of the solar system, (b): Its gravitational force to hold back the creations, (c): The diurnal rotation and annual revolution for thermal balance on surface, (d): A complex mechanism of material differentiation to form a layered dynamic structure of Core, Mantle and Crust, followed by (e): Formation of an Oxy-Atmosphere and water soaked Hydrosphere, and lastly, (f): A billion and half years of evolution to give rise to a unique species called Homo Sapiens. The human species makes up only one of the 2 million fully known and described species of living thing, apparently an insignificantly small minority, and appeared on earth in a flicker of mere 0.05 million years compared to 3.8 billion years of organic evolution in the 4.6 billion years old Earth. However, his emphasis on anthropocentric developments has led to large-scale environmental degradation, pollution, and species extinction to the extent that he is not only considered to be a dangerous species but also endangered of its own doings. A band of new professionals -Earth Doctors-, are needed to heal the damage caused by blind developmental activities. There A Geoethic Pledge is proposed as the mantra for the "Earth Developers".

Key Words: Goldilocks' Belt, Core, Mantle, Crust, Anthropocene, Rewild, Earth Doctor, Geoethical Pledge.

Prologue

The whole concept of Mother Earth shifts from symbol and myth to a dawning realization that every single one of us has feet of clays and that we live on a parent, not a planet. (Lyell Watson)

There are some 40 billion years old earth-like planets known in the universe. The present forms of life in our planet have become possible because of many factors:

1. An ideal distance from the sun, that maintains a narrow average range of temperature of 150C, neither too hot to vaporize nor too cold to permanently freeze the water, but simultaneously maintains the triple phase of water. Classically this is known as the Goldilock Belt where all three phases of water is simultaneously stable and the existence of life is made possible.

2. A gravity force strong enough to hold the "Creation" including humans, from throwing into the abyssal space due to the centrifugal force of the rotating earth. The earth rotates at 1375 Km per hour.

3. A rotation fast enough to prevent diurnal temperatures from being extreme.

4. A unique differentiation of matter by natural selection gives rise to a Core, Mantle, and Crust (Lithosphere). The Core is hot enough to facilitate convection and generate a strong magnetic field to shield the earth's surface from solar wind and cosmic radiation.

- The Mantle is fluid enough to drive Plate Tectonics which makes the surface architecture uneven and enables the flow of water.
- The Crust is thin enough to crack into Plates but thick enough to prevent baking from the hot Mantle, and the continental mass carries enough radioactive elements to replenish heat loss, thereby, delaying the universal death of the planet by cosmic freezing.
- The Hydrosphere maintains thermal homeostasis through the circulation of water and carries the crucial "primordial juice" of the polar water molecule, which would have imparted "charge" into the earlier inanimate differentiates (silicate minerals) and triggered life through clay minerals. (Crain-Smith's hypothesis of chemical evolution that led to evolve life on Clay).
- The Atmosphere evolved the catalyzing Oxygen to enable oxy-life and subsequently an Ozone Shield to protect future life from UV radiation.
- Finally, a long period of evolution by natural selection and a series of geological events of diastrophism evolved the spectrum of the organic world. The notable one, for example, but for the elimination of the Mesozoic reptiles by massive meteorite bombardment, some 65 million years ago, and mammalian evolution could not have gotten through leading to the appearance of Man at the apex.

No wonder, "Life can be an Accident, an Anomaly or Architected".

Discussion

In the long 4,500 million years history of the earth, 3000 million years of inanimate differentiation, followed by 1000 million years of organic evolution, the earliest hominid is known to have appeared 3.5 million years ago, and the modern man only 15,000 years ago. It is evident; therefore, that Man is not essential to the existence of life on earth but is a privileged species. "Earth with life is a rare object and we are privileged to be here". Among

millions of inanimate compounds that have evolved by material differentiation and at least 8 million known animal species, the possibility of Homo Sapiens becomes an insignificant one. Further, an individual is only one among 7 billion human beings that inhabit the earth and represents the sole fortunate soul among 20 million competitors that swam to reach the ovum first in order to be a "Being". Therefore every life is infinitely insignificant on one hand, but rare and precious on the other. The wanton destruction of life on this planet by way of deforestation, species extinction, and mass annihilation on political, ideological, and economic grounds by the very technologically advanced groups of people who, on the other hand, are in constant search of life outside this planet, is a dilemma. The cosmic onion, with Man at the center of creation, peeled off with Copernican discovery. But anthropocentric stewardship of this spacecraft has come to stay and man will continue to decide the future of life on earth. Therefore, developments centered on Man are more crucial.

Planetary environment, more restrictedly, the global environment provides the substrate to and affects all man-made developmental activities. For example, The lithospheric process like Plate Tectonic is effective in geological time and may appear to be of little significance to human civilization. However, seismicity resulting from plate movement damages the human environment. Similarly, sheet erosion, massive flooding, El Nino, deforestation, and desertification, tell on human habitation. The latest act of soil pollution arising out of earth resources utilization, waste disposal, and chemical agriculture has already left an impression on the global environment.

One of the least realized processes in Plate Tectonic is the assimilation of large volumes of carbonate sediments with siliceous magma down in the subduction zone. The reaction product is carbon dioxide. The magnitude of this reaction and CO₂ generation therefrom is so large that industrial emission of carbon to the atmosphere appears peanuts. Environmentalists concerned with global warming need to look into this planetary process.

Similarly, the Ozone Hole over the South Pole has become a familiar issue and its absence over the North Pole is merely explained by the global circulation of wind mass, although most Ozone-producing activities lie only in the Northern Hemisphere. A NASA survey in the seventies attempted to monitor Methyl Iodide emission from the sea surface. The compound is volatile at 42°C. The Iodine-enriching algae on the ocean surface absorbs the Methyl Iodide and catalyzes Methyl Chloride, which when released, joins the Ozone breaking Chlorine ions. Since the ocean mass dominates in the southern hemisphere, this natural process may be significant to the development of the Ozone hole observed in the South Pole. The essence of this revelation is that if the long offshore belts fall under the commercial harvesting of Iodine following the natural process of algal concentration, the impact will be disastrous.

Much useful information on human health and the environment arising out of planetary processes ought to come from traditional knowledge. It is obvious that, while on its space wander, the Earth is continuously bathed with terrestrial, extraterrestrial, or cosmic fluxes, magnetic, electromagnetic, or photonic. It is also known that a differential motion of a mass in these fluxes would always result in an induction response. Even bricks laid with a jerk or throw of clay lump from hand to mould by ancient Mexican masons have preserved the prevailing geomagnetic flux in the magnetic particles of the brick, as also the magnetite grains in the classic gravity settling during magma cooling. Geologists and Physicists have recorded fossil fission tracks in minerals. The lunar pull on the earth is so vivid in ocean tides and so also the impact of UV radiation from the sun. Magnetotherapy has come to stay. MRI is a recognized technique in the medical profession and visual pictures on TV screens are a mere transformation of electromagnetic waves, albeit in physically perceptible scales. Even the modern technological revolution started with a mere turning of a copper loop in the magnetic flux between two poles. There is no doubt, therefore, that humans moving in space and time with this wandering earth and bathed in a variety of cosmic fluxes would generate a natural response, which otherwise will have impacts on human health and the environment. After all, the human body too, like a magnetic particle or a copper loop is a vessel of 75% polar water molecule, that carries ferromagnetic and paramagnetic substances and a variety of charged cations and anions. It is virtually a charged riverine system of fluid flows, and sensory and motor nerves. It is noteworthy to record that Vipasana, a traditional technique in ancient Buddhist culture attempts to recognize such natural responses even in various parts of the human body by meditation and concentration of mind. The technique needs to be seriously examined by modern Scientists for recognition of planetary or stellar influence on human health and the environment. Since the phenomenon is fundamental and causal the benefit derived will be sustainable.

Indian Scientists sit on a mountain heap of traditional information and will do a yeoman service by the scientific pursuit of such studies on the impact of terrestrial, extraterrestrial, and cosmic bodies on human health and the environment. After all, modern astrophysicists are fully convinced that a ray of light can be bent, space

can be curved and even the time clock can be slowed down while passing near dense stellar bodies. Particles and processes represented by life on earth, though an infinitely insignificant “Reality” are not outside the domain of this cosmic mechanism. Astrology should not be brushed aside as a mere profession of quacks on footpaths, sitting with mysterious pictures and a domesticated parrot, or even selling “computer horoscope” from an air-conditioned cubicle. Modern Science and Technology have put the environment on the market in the name of EIA, EMP, ETPs (Effluent Treatment Plants). Like “Ecology” and “Economy”, “Astrology” and “Astronomy” carry the same root but are equally mismatched and misunderstood.

Somehow a similar conundrum observed is that whenever the great pontiff, the Pope, visits a country, climbs down the aircraft and steps onto the ground, his first action is to prostrate on the tarmac to kiss the earth. For the “Rest of us” rampant digging of the earth for mining, constructional activities, laying of transmission and communicational lines, etc. Are acts of development and progress? The larger the bite of a shovel, the more advanced we are considered. However, the “Rest of us” (the earth diggers) long to reach the feet of the Pontiff (the earth kisser) with great reverence. It is of course true that plants shatter rocks to extract nutrients, animals burrow earth for shelter and Man has been ploughing land for agriculture, all for survival, like a baby growing on its mothers’ barest. But a baby never “milks” the mother, as Man does onto the (mother) earth. Earth is for living not for digging.



Whenever we dig we dig for our grave.

The crust of the earth has 8 % Ferrous Iron which is being continuously oxidized by our oxidizing atmosphere producing red soil (laterite). All forms of digging expedite the process by uncovering underneath materials. Oxidation of each atom of Ferrous Iron to a Ferric state takes one atom of oxygen from the atmosphere. Only 300ft. of crust if oxidized will strip out all the oxygen of the atmosphere. Therefore whenever we dig, we dig for our grave. In short, is the planet, a home for a variety of life, responsibly husbanded by Man or is it a mere roadside motel for a transient visit? It is the Earth Scientists who ought to take up the challenge and if damage has already occurred, India with a traditional reputation for healing the culture, can provide “Earth Doctors” to revive the pristine global health (rewild). In other words, India must produce a different breed of Earth Scientists to be called “Earth Doctors” by suitable modification of the anthropocentric curriculum that we are following today in our Universities. This will also improve the employment opportunities of the profession and provide a contended lifestyle to our Geoscientist. Of late, when the various life-supporting Systems have been found to be under anthropocentric assault and the developmental efforts appear unsustainable a new class of Geoscientists have appeared to preach and practice Geoethical principles to prevent further damage to the deteriorating planet. Effectively it means taking up a pledge as follows:

*The Earth is my Home,
Her Air is my Breath,
Her Water is my Blood,
The Biosphere is my Flesh,
And the Rocks are my Bones.
The Mountains are my Inspiration
And Rivers are my arteries,
The Ocean was my Womb,
And the Soil is my Mother (Matti is My Ma' ti) *
To Preserve and Protect them is to Preserve and
Protect my Self.*