Editorial

When we think about the history of our planet, humankind's tenure on Earth has been relatively brief. Although the timeline has been short, the imprint of human endeavor and its resulting scientific pursuit well exceeds the brevity of its sojourn. Already the Universe had been some 9 billion years in the making when, a little over 4.5 billion years ago, a disturbance caused the massive cloud of dust and gases of the nascent solar system to collapse. As the nebula caved inwardly, the swirling collective of materials forged the sun at its center. The sun took form and matter, gleaned from a disc of residue material, began to clump and gave rise to the planets. Eventually the dust settled and the solar system formed rank, garnering the oblate spheroid we now call Earth its advantageous positioning as the third sphere from the sun.

The most distinguishing factor of earth from any other celestial body (at least that we know of so far), is that it gave rise to, and supports, life. This is the result of a fortuitous combination of chemicals, water and its considerable swathes of temperate climate. Earth's optimal distance from the sun has allowed for an abundance of water in liquid form, and this combined with the benefits of a stable rotation, gravity, a protective magnetic field, and the ability to geologically equilibrate have all helped to further and support complex life. Though fossil evidence indicates that very early life forms seemingly emerged not long after earth and its oceans were configured, it took quite some time before our human ancestors are believed to have appeared, merely a few million years ago. These made up for the late entry however, benefitting from a tachytelic evolution, they soon branched out, migrating to other regions and environments.

As they began to roam, the limitations of the human physical structure precluded many climatic conditions, optimal temperateness along with other favorable conditions providing opportunities for growth, whereas hostile climatic circumstances generally resulted in fragmentation and population decline. As the human brain amassed complexity, mankind soon found ways and means to circumvent some of the vagaries of nature. Harnessing the abilities of fire, provided the capability of heating as well as the creation of tools used to hunt, fabricate shelters and clothing, thereby enabling both

greater mobility and level of protection from environmental perils and other adversities. In the early days when the total human population was still at minimal densities, these mean-dering communities triggered negligible consequence for the planet. As populations grew so did their needs and wants and the requisites of providing for rapidly expanding communities served as impetus to further scientific inquiry.

The industrial revolution initiated a shift away from what was a biomass, solar derived existence, towards mass production sustained by power that was sourced from the ground. Fossil fuels have provided the primary impetus for all the concrete, steel and other materials used to house, transport and link the world and its populations in a myriad of ways. In the process, mankind gradually moved away from being a part of the natural world, towards a mastery of it.

Discovery and innovation in science and technology especially since the mid 1800's through present times, has developed exponentially. Most of what is known about the planet today is firmly the due of scientific research which has fostered identification, detection and the ability to decipher many of the planet's mysteries. With each new scientific observation and discovery, our definition and understanding of Earth changes and develops. Science has been integral to the acknowledgement that the planet itself and the species that inhabit it are all intertwined components of complex dynamic processes, these constantly shifting and evolving. Within this fluctuating scenario, perceptions of the natural world and its interwoven collaborations continue to expand as we extend our comprehension through new findings. Even so, many of the Earths' greatest enigmas are as yet unresolved, and it is likely the planet harbors countless perplexities still to be identified.

Scientific inquiry and the resulting discoveries that this engenders, has and continues to further humankind's understanding of our perimeters, oftentimes upsetting accepted knowledge and practices, contributing to changes in the way that we view as well as understand our planet and ourselves. By definition scientific discovery requires the willingness to venture not only beyond recognized boundaries of unknown territory, but beyond established convention, requiring an

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original perspective on what might seem familiar terrain. In the process the scientist oftentimes opens the door to pioneering thoughts providing new input as to our perception of our world, in the process redefining our place within it.

Despite many outstanding queries, scientific data continues to present supporting evidence to what is increasingly apparent, that human population growth and its accompanying consumption have been sustained at tremendous costs to the planet's well-being. Earth has been overloaded by the destruction and depletion of its natural capital, so much so that the earth's ecosystems have been impacted. Civilization has proliferated to a level to where it has altered the planet's environment. Humanity is exceeding the planet's boundaries and it is increasingly crucial that a balance between the earth's renewable natural resources and the humanity that it maintains is achieved.

The word "science" means knowledge, and while knowledge has a big influence, it is only the necessary element for any goal, rather than being sufficient entirely on its own. Scientific query and the discovery process will remain

at the forefront as we struggle to find ways to balance and manage our natural world while providing for its peoples. More and more scientific research will serve to provide information critical to increased understanding of the state of health of the natural processes of the planet, as well as aid in the monitoring and maintaining of environmental equilibriums, providing analytical evidence to help pinpoint where natural buffers and balances might have broken down, effecting ecological landscapes.

Beyond scientific data, there are a number of other components required to propel change, among these is that of social evolution, at least partly reflected in Planck's principle, which considers that scientific change does not transpire due to a transformation of view of individual scientists but rather is due to a change of position in successive generations of scientists. What happens is that the future generations accept the new ideas, and the opponents die out.

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