

**AN APPRAISAL OF BIODIVERSITY, SOCIETY AND TECHNOLOGY****SUMIT ROY**

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Nature is abundant and we are blessed with these abundance. Abundance is a powerful word and man wants to be in the realm of abundance. Since the dawn of the civilization man has learned to harness nature and conquer it so as to pave their path for convenience and man with his ingenuity and struggle has made them established. Homo sapience as a species is the only species who has managed to change the course of nature to make it habitable and comfortable. Man with his hand and brain could construct industries which manufacture machines, bulldozers, excavators, trenchers, dynamite, loaders, scrappers and many more. Man took time to and evolved from the Stone Age to the age of information and digitization. In the process of growth and development the material wellbeing and the place for living is given emphasis so the paradigm that we are built in is to be habitable there has to be abundance of material flow in the form of products and the surroundings has to be designed for the convenience of the species homo sapience. Human mind has evolved to watch the surroundings and transform it for its own and at the same time humans are endowed with the ability to appreciate the nature. Aesthetics is the sense of feeling one with the beauty and nature provides with ample places and spaces where one can get struck with the splendid beauty of nature. Consider the rolling waterfall, a savannah, a natural landscape with thousands of butterflies around, a vast stretch of land all these can trigger man to get contemplative. The poets and the writers get inspiration from nature.

BEAUTY AND BIODIVERSITY

Immanuel Kant in his critique of the Aesthetic Judgement examines the feeling of the beautiful and sublime. In beauty Kant finds an *a priori* element of an unusual nature. As per Kant when one feel that something is beautiful than one do not ask for the advantage one can gain from it nor what duty one owe to anyone in consequence of it; one forget oneself completely in the object¹. So the feeling of beauty is based on one's sensibility and understanding. Kant also mention another category different from beauty and that is sublime. Here the experience is different from the sensibility and understanding. In the case of sublime an object is perceived which one's understanding is unable to fit neatly within the categories, and so the object arouses within one's feeling of wonder and awe. Two categories of sublime Kant's mention one is mathematical sublime like the built of the pyramid and the other is dynamical sublime which is represented by a volcano, a mighty waterfall (ibid 291). As mentioned nature is filled with resources and getting the sense of awe through encountering the nature and getting to comprehend the plenitude of nature. The diversity of nature is rich for us to recognize and unfortunately nature is so radical that we have learn to watch it and the time has come to make a policy to appreciate its beauty and utility. The Convention on Biological Diversity that was signed at the *United Nations Conference on Environment and Development*, held in Rio de Janeiro. The CBD has three main objectives: to conserve biodiversity, to enhance the sustainable use of its components, and to share the benefits arising out of genetic resources fairly and equitably². Biodiversity is the diversity of life on our planet and more is the diversity more is the linkages and more is the connection through food chain and the complex connections establishes life. Through ages many species got extinct and many are evolving and getting the exact count is a difficult task but nature knows how of the diversity. We as a species has to get tuned with the diversity of nature and appreciate as we derive immense benefits from it. One – half of all pharmaceuticals used today are developed from naturally occurring ingredients, and when a useful organism or a substance is found, it could be worth billions in monetary value³. What is distinct about biodiversity is getting the sense of the presence of it and giving it importance. It is human inability not to value entities that we don't relate and understand its far reaching effect. The concept of sublime given by Kant is very apt and this appreciation of biodiversity will fall under both mathematical and dynamic sublime. As the diversity is so vast that is beyond our senses to capture, its mathematical aspects lies in its order from the perspective of genetic diversity, Taxonomic diversity and ecological diversity. For example if only we consider the taxonomic diversity than its components includes: kingdoms, phyla, classes, orders, families, genera, species, subspecies, populations and individuals⁴. Its dynamism lies in its evolution and



extinction and all for the benefit of its kind in the planet. Biodiversity has its benefits and today's industrialised societies have to be concerned the way we treat it. Generally the importance is understood in the monetary terms. Recently in a first of its kind exercise, study, executed by Indian Institute of Forest Management (IIFM), Bhopal, at the behest of the environment ministry's National Tiger Conservation Authority (NTCA), provides quantitative and qualitative estimates of benefits accruing from tiger reserves which include economic, social and cultural services. India has conducted economic valuation of six of its tiger reserves and placed their value at Rs 1, 49,900 crore. The study has also noted that these six reserves have been generating annual monetary benefits worth Rs 7,970 crore. The six tiger reserves which were surveyed for this study are Corbett, Kanha, Kaziranga, Periyar, Ranthambore and Sundarbans⁵.

SOCIETY AND BIOLOGY

Physical sciences and engineering is much sought after and it pervades society as a dominating discipline and time has come when biology will be sought after. The most fundamental questions of existence, about organisms and their evolution, challenges faced by nature can be answered by biology. Studying nature is a wander and with what precision man is created and looking at the diverse species that exists, blows the mind of the curious, how can the maker be so creative. It is the creative act or process that life emerged. Biological sciences studies life it gives us insight into the life's function, processes, diversity, unity and integration. Life has evolved and this evolutionary process is an adaptive work out. Over a millions of years our earth got modified and developed an intelligence where it can support life. Today biology in the domain of molecular biology, behavioural biology, to medicine is in the look out to understand the mysteries of life. Studying biology is taking a deep peep in the wonderland of evolution and intelligent life processes. As we are wonder struck by the Kalidasa's Shakuntala or by the marvel of Taj Mahal so is the wonder in the life processes. Reflect on the biodiversity, it is a textbook of evolutionary biological history and biological geography. Today progress is generally measured in technology and the concerns that is stark is environmental hazards, forest depletion, food and nutritional challenges, concerns on biotechnology, and host of health challenges. Biology strives to decode the challenges and find measures to effectively deal with them. Life as a whole evolved it is a mystery how it evolved to make it so perfect in its working. Life itself is so diverse and this diversity make it possible for all the species to live and thrive. Life is enduring and this endurance is possible of certain threads that is running across life processes. Unfortunately these threads are not visible and in these threads are called as cycles which I call it as life rhythms. The life rhythms are the very essence of life and biology gives us enough lessons of it through the study of ecology. Among all species man has emerges as most manipulative of life and these has become the concern. If a species is given power to change should the species do whatever and wherever he can lay his hand? A lot of destructive acts on the environment is seen as per David Ehrenfeld "The massive, anthropogenic die-off of plant and animal species now occurring far exceeds the usual extinction rates that have prevailed throughout most of evolutionary history. In 1995, Pimm et al. estimated that extinction rates of taxonomically diverse groups of species from widely different environments were 100–1,000 times their pre-human levels. In 2000, the IUCN's Red List of endangered species showed that 24 per cent of mammals were faced with extinction (Hilton-Taylor 2000), an extraordinary die-off even when compared with that of the late Pleistocene ice ages. During the second half of the twentieth century and beginning of the twenty-first, when global trade and the global expansion of new technologies and exploitation of natural areas have been increasing rapidly, species losses have become comparable to those of the great extinctions of earlier geological epochs"⁶.

It can be seen man the most manipulative of all species is seeking comforts and in the process disregarding the diversity of life. So one comforts is achieved at the cost of diverse range of species. And these species which are getting lost are also useful and beneficial to man and eventually man has to pay a price. Society is buying comforts without any concern from the rest of the habitat. Habitat destruction happens when mega projects encroach the forested regions with rich biodiversity. As per Vandana Shiva the Green Revolution in agriculture, the White Revolution in dairying and the Blue Revolution in fisheries are revolutions based on the deliberate replacement of biological diversity with biological uniformity and monoculture⁷.



We do not see the “space” of the world; we live our field of vision. We do not see the “colours” of the world; we live our chromatic space. We are experiencing a world. But when we examine more closely how we get to know this world, we invariably find that we cannot separate our history of actions – biological and social – from how this world appears to us. It is so obvious and close that it is very hard to see⁸.

It has been suggested that one out of every 125 plant species studied has produced a major drug, whilst for synthesized chemicals the potential for finding major new drugs is of the order of one in 10,000 compounds tested (Dobson 1995). Thus, the search for useful compounds from biological material goes on (perhaps the most conspicuous example of what has come to be known as bioprospecting). For example, in the area of cancer treatment, clinical trials have been conducted using compounds derived from tunicates and a bryozoan, and preclinical trials on compounds from a sponge and a mollusc⁹.

THE TECHNOLOGY IMPERATIVE

Diversity ethics, and technology are securely associated because humans have varieties as to which technologies to advance and put into action. A wide range of ethical issues, many of them connected to biological diversity, have emerged due to the development of a vast assortment of chemicals; the shift of the earth's surface, waters, and atmosphere by human activities; and of course, the development of newer technologies such as genetically modified organisms, biotechnology, robotics, nanotechnology, and nuclear energy and many more. Novel technologies such as genetic manipulation of trees to allow them to uptake more carbon dioxide and advanced membranes to assist in carbon dioxide separation are worked out. The problem is that these are so-called “end-of-pipeline” approaches that rather than altering societies approach to energy generation, simply attempt to dispose of the consequences in the least objectionable and least costly manner. The interplay of technology and sustainability is basically self-evident, they are inseparably united. Humans characteristically have a difficult time forestalling the outcomes of developing specific technologies and addressing the consequences of technology. Technology and ecology can be quite complex in the realm of nature particularly when they are together. Rachel Carson in her book *Silent Spring* exhorts that “Since the mid-1940s over 200 basic chemicals have been created for use in killing insects, weeds, rodents, and other organisms described in the modern vernacular as ‘pests’; and they are sold under several thousand different brand names. These sprays, dusts, and aerosols are now applied almost universally to farms, gardens, forests, and homes non-selective chemicals that have the power to kill every insect, the ‘good’ and the ‘bad’, to still the song of birds and the leaping of fish in the streams, to coat the leaves with a deadly film, and to linger on in soil—all this though the intended target may be only a few weeds or insects. Can anyone believe it is possible to lay down such a barrage of poisons on the surface of the earth without making it unfit for all life? They should not be called ‘insecticides’, but ‘biocides’¹⁰.

Take the example of advancement in the field of agriculture a great achievement of weed science and other pest control corrections has been development of diverse technologies to control weed/pest invasions in most crops. Weed science research advanced with a limited basic biological and ecological footing. The chief approach to solving today's important unsolved weed problems (e.g., parasitic weeds, perennial weeds) remains application of the chemical technology that has been used magnificently to answer annual weed problems. The environmental, human health, and non-target species effects are not given any heed, ignored, or given an external agent's cause and the crucial biological and ecological information to address these things is absent or very conveniently overlooked. Technology has become pervasive and yes it should be as it has made civilization progressive but it has a side effect in some of the fields. So collectively humanity are in the dilemma as technology is needed to support the growing challenges and complexities and also technology can create more complexities which may not be visible in its immediacy. For example technology in agriculture is the single largest and most permeating human interaction with the environment, its science is feared by many, and criticised by some. And there are many examples where technology's has a far reaching effect. Biodiversity has its both extrinsic and intrinsic values. Reckless use and application of technology in industries and household add to the carbon content in the atmosphere. The Greenland and the west Antarctic melting of ice is the evidence for rising global temperature. Polar Bear is an endangered



species. So the food chain is already disturbed in the Polar Regions. To make space for technology parks agricultural lands and natural habitats are cleared. Millions of insects and bacteria are invaded whose potential value may in billions or rather invaluable. James Lovelock in his book *The Revenge of Gaia*, states that "The Earth System behaves as a single, self-regulating system comprised of physical, chemical, biological and human components. ' Here is a wisdom. Technology has its wisdom. So man's technology is encountering the natural processes of the earth which by itself is a technology. So the technology imperative that is anthropocentric requires a shift and if the shift can be made which is in tune with the diversity of life then man starts dwelling in the fact value which is we need diversity to thrive. What is required in the age of knowledge is managing mind that creates technology. Nicholas Maxwell (1992) advocated a move from a philosophy of knowledge to a philosophy of wisdom. In his view, a move toward a philosophy of wisdom demands several things that seem germane to appropriate changes in agriculture. Maxwell proposes fifteen changes and some of the appropriate in the perspective of technology and agriculture are¹¹:

1. The definition of intellectual progress should be expanded from progress in knowledge to include progress in ideas relevant to achieving a sustainable, wise world.
2. The intellectual domain of science which has consisted of evidence and theory should be expanded to include research aims. Scientific discussion should be expanded to include discussion of the effects of scientific achievements on life; all life, not just human life.
3. Social inquiry and natural (agricultural) science must be more integrated. For example, the social effects of agricultural technology often appear after adoption and should be considered before adoption. The academic enterprise should not be intellectually dissociated from the world but "constantly learning from, speaking to, and criticizing society"(Maxwell, 1992) as they move together toward cooperative rationality and social wisdom.
4. Philosophy must cease to be a specialized discipline and become an integral part of all inquiry that is concerned with our most fundamental problems. Many of those fundamental problems are essentially agricultural. How can all people be fed? How should we practice agriculture? Is there a human right to food? (Maxwell, 1992)

The above points makes us to be contemplative. On one side there is an application of technology to create and generate food and the same technology destroys life and that can ramify in the larger life perspective. Society strives for development and this society is comprised of not only humans but also other beings which needs and demands a space for their existence and procreation. Humans interferes the process and in the way humans are interfering with themselves.

CONCLUSIONS

Society plays its role and this role evolves over a period of time. Society is facilitated by tools that accelerated its growth. With the growth of society through knowledge, gadgets, technology, and gaining and creating convenience man has fallen in the oblivion and the obvious has travelled a distance. More is the distancing more humanity is distancing from the rich and abundance of life. Biodiversity is the gift of life of life from the time earth started evolving, in valuing the diversity of life the species *homo sapience* is valuing itself. This is a matter of realisation as we valuing the abundance we make the chain of food and the web of food stronger. Nature has its value cycle and the threads in the cycle is a fabric that holds life. Technology and society plays a role in preserving the fabric. If man can shift his attitude then the fabric of life can be strengthened and technology, man and diversity can have synchronised existence. Biodiversity is a gift to the humanity. Whether we are gift to the other species we are not aware. What is the man's role in the ecosystem? As per the leading biologist EO Wilson "human demographic success has bought the world to the present level of biodiversity crises" he further emphasis that "the richest nations preside over the smallest and least interesting biotas, while the poorest nations, burdened by exploding populations and little scientific knowledge, are stewards of the largest"¹².



It is a matter of fact that society has a whole is collectively a colony of intelligence and this intelligence of humans is not wholesome and it is one-sided. Technology is the added population that has added one more fatal colony. So does it mean humans has to abandon all the progress of the civilization? Here lies building the bridge of co- existence and that is a matter of developing a collective intelligence who can be part of maintain the natural intelligence of the way nature is.

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