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Liberation Of Metaphysics, Science And Consciousness From Reductionism And Mechanistic Paradigm

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Abstract -

Modern sciences adopted the tool of Reductionism and Rene Descartes has been the most foundational thinker of Mechanistic Reductionism which founded a much bigger theoretical perspective of Newtonian mechanics in the next century. Rene Descartes laid the foundation by arguing that animals could be regarded as machines in some way and it was Newtonian mechanics which presented the laws of mechanical motion. Human quest for reductionist and unchangeable reality has given birth to the present gene centric fetishism biology. Present gene centric biological understanding has failed in understanding living organisms. Living organisms and living systems cannot be reduced to the orders of their genes and they are active agents with the capability to adjust to their environment.

Liberation of Metaphysics, Science and Consciousness from Reductionism and Mechanistic paradigm

In ancient times philosophers like Parmenides , Plato and Aristotle who are fathers of the modern western civilization have proposed that the world is made of substances which are eternal in nature or are presenting the immutable reality which exists beneath the changing world. This line of classical or dominant view of philosophy which inquiries into the nature of being (ontology) describes change as an illusionary or superficial process in the world. They believed that ordinary world reality was constituted of enduring substances and Plato's theory of form is the perfect example of such kind of thinking. This same line of thinking about immutable reality and permanence came in the garb of scientific rules which underlies the world. Modern sciences adopted the tool of Reductionism and Rene Descartes has been the most foundational thinker of Mechanistic Reductionism which founded a much bigger theoretical perspective of Newtonian mechanics in the next century. Rene Descartes laid the foundation by arguing that animals could be regarded as machines in some way and it was Newtonian mechanics which presented the laws of mechanical motion. Mathematical genius Pierre-Simon Laplace stated that a supreme intelligence could use mathematics to predict the future completely and also retrofit the past as well.[1] Such a machine can become omniscient. Plato also had a great faith in the ability and rationality of mathematics.

1 Denis Noble , Dance to The Tune of Life: Biological Relativity, Cambridge University Press; January 2017 ,pp 160-166.

Process Philosophy & Epistemology -

Process philosophy or philosophy of processism define the processes, change or shifting relationships as the only real experience of everyday living. Heraclitus the ancient Greek scholar has claimed that the basic nature of all things is the change and he believed that conflict is the foundational force which brings about the change. Friedrich Nietzsche proposed the philosophy of becoming which is antithetical of the metaphysical preoccupation with being. Nietzsche rebelled against the reductionist nature of metaphysics which was the foundation of modernity to create an alternative metaphysics of being which can provide a cognitive framework of understanding for an ever-changing world. [2] Alfred North Whitehead believed that the fundamental purpose of metaphysics is to create a logical framework to understand the character of the world. The metaphysics helps in formulating the language and conceptual presuppositions that are used in the illustration of the facts of nature. According to Whitehead every new discovery of new facts of nature contributes to the reconstruction of metaphysics.[3] Process thought or philosophy of organism defines truth as a movement in and through substance as was done by Hegel. They reject classical philosophy which defines substances as fixed concepts or things which has been the Aristotelian method. Whitehead's thought process is different from Hegel in that it describes entities which arise and join in becoming and do not accept Hegelian conception of a dialectically opposite process of change. Process thought asserts that truth can be integrative, destructive both together while flowing to existence. The most important aspect of Process philosophy is that it stresses on the dynamic and ever-changing nature of reality of existence and theorizes the world as an ever-transforming and dynamic series of processes. This philosophy has integrated the science and religious world views into a harmonious relationship especially in the light of emerging quantum physics. Quantum physics has challenged the classical understanding of the world as made up of static and mechanical objects which indirectly challenges the legitimacy of old metaphysics based beings and permanence.

Gene Centric Biology and its flaws-

Human quest for reductionist and unchangeable reality has given birth to the present gene centric fetishism biology. Present gene centric biological understanding has failed in understanding living organisms. Living organisms and living systems cannot be reduced to the orders of their genes and they are active agents with the capability to adjust to their environment. Life resides in the purpose and creativity of the whole organism and to reduce the significance of their existence to the genes is very reductionist. Life manifests itself in the purpose and creativity of the whole organism. Living organisms use their genes as tools for their active adaptation to their environment and it is wrong to believe that genes determine the existence of an organism.[4] Now time has come to adopt the holistic approach towards life and respect the autonomy of the organism as a whole. There is the need to move from genome centricity to the higher level and complex organizations like cells, tissues, organisms and ecosystems. This will help in understanding the purposeful action of organisms and multiple interactions across all levels. Raymond Noble and Denis Noble have asserted that life cannot be reduced to codes written in DNA and chemical reactions. The analogy like "the selfish-gene" given by Richard Dawkins which is based on gene centrism helps in justifying the political ideology of liberalism and individualism. This justifies crass income inequality and injustice among fellow citizens.

New Darwinism Synthesis- Reductionist Approach

Neo Darwinism differs from classical Darwinism because it identifies that only the genetic variants can be passed to the new generation and rejects the possibility of phenotypic variants being passed to the new generation. This rejection of the Lamarckian theory of inheritance of acquired characteristics and reliance on reductionist gene centric approach to inheritance separates it from Darwinism. Darwin was holistic in his approach because he pointed at the role of ecosystems in the creation of the species. New Darwinism has given excessive importance to the molecular level understanding of evolution and species.[5] New

[2] Cox, Christoph (1999). Nietzsche: Naturalism and Interpretation. University of California Press.p.170.

[3] Alfred North Whitehead (1929). *Process and Reality*. New York: Macmillan.

[4] Denis Noble & Raymond Noble, Understanding the Living System, Cambridge University Press, 6 July 2023.

[5] Denis Noble - Dance to the tune of life- Biological Relativity-Cambridge University Press (2016) pp 123 - 159.

Darwinism believes in the Weismann Barrier which asserts that the changes in the body (somatic cells) cannot be passed down to offspring through the germline (sperm and egg). Denis Noble points out that the Weismann Barrier is not as rigid and new evidence suggests that somatic cells can influence the germline. Denis stresses on the role of epigenetic changes and other non-DNA- based mechanisms which have the potential to allow acquired characteristics to be inherited in the new generation.

Denis Noble promotes the principle of "Biological Relativity" as simply that there is no privileged level of causation in biology: living organisms are multi-level open stochastic systems in which the behavior at any level depends on higher and lower levels and cannot be fully understood in isolation. Just as Special Relativity and General Relativity can be succinctly phrased by saying that there is no global (privileged) frame of reference, Biological Relativity can be phrased as saying that there is no global frame of causality in organisms.[6] Darwin made the first step in this approach when he proposed that speciation could only be understood in terms of the complete ecosystems (to use modern terminology). The principle of Biological Relativity takes this view to its logical conclusions. One of the major flaws in Neo-Darwinism was to excessively focus on the "molecular" level. The molecular and gene-centric form of reductionism is the most prevalent form of reductionism and Biological Relativism offers a way out of it.

Spinoza's Refutation of Rene Descartes regarding Human Body -

Denis Noble gives a quotation of Rene Descartes where he predicted the rise of Neo-Darwinism. Descartes asserts, "*If one had a proper knowledge of all the parts of the semen of some species of animals in particular, for example of man, one might be able to deduce the whole form and configuration of each of its members form this alone, by means of entirely mathematical and certain arguments, the complete figure and the conformation of its members."* Descartes reduced animals to the level of automata while he recognized the human capacity of 'free ***will***' which emerges from their soul when it interacts with their body. Descartes believed that there is no inconsistency in nature, understanding of the parts can give complete understanding of a system and organism. Baruch Spinoza contested this reductionist approach of Descartes and asserted the autonomy of organism and human body in controlling and regulating the nature of molecular activities within its parts. Spinoza was further vindicated by the quantum theorists when they also asserted that whole is bigger and autonomous of its parts. Spinoza also opposed the mind- body dualism propounded by Rene Descartes and asserted the umbilical relationship between mind and body. Denis Noble points out that Spinoza foresees that the cellular environment has the capacity to regulate and shape the activities of the molecules of living organisms. Denis Noble recognized the insight of Spinoza that even the smallest particles of the body do indeed obey the laws of physics and chemistry in their interactions with other molecules and the reductionist approach to understand the living organism is flawed.

Biological Relativity vs Gene Centricity-

Antony Van Leeuwenhoek has understood the importance of organisms and cells, this has helped Robert Hooke to subsequently coin the term 'cell'. It was A.R.Leeuwenhoek and Robert Hooke that cell has been realized and being recognized as the basic structure of living organisms. It cannot be denied that cells are further subdivided into sub-cellular mechanisms and these mechanisms are further subdivided into pathways and pathways are dependent on proteins. Proteins are reducible to genes and this chain of reduction created an illusion which Denis Noble termed as 'Gene Mania". Denis Noble points out that autonomy of the organisms and cells has to be recognized if we want to understand the real working of the human body. Genes are coded as DNA sequences and these are replicated so that they can be passed to future progenies but to treat genes as causal agents is a mistake. Denis Noble points out that proteins play a much more important role in most of the biochemical processes of life.

[6] Raymond Noble, Tasaki Penelope J and Denis Noble, Biological Relativity Requires Circular Causality but Not Symmetry of Causation: So, Where, What and When Are the Boundaries? Frontiers in Physiology, 17 July 2019.

Living systems are capable of changing the environment and have been changing their environment and initially the atmosphere did not have sufficient amounts of oxygen molecules when life started on the earth. Denis Noble suggests that the idea of a niche within which a particular organism can thrive ignores the fact that this niche was the result of continuous efforts of the previous generations of that organism. Denis Noble asserts that the relationship between the environment and organism cannot be static and it is rather evolving. Denis Noble terms this relationship as a circular form of causality between a particular organism and their environment.

Circular causality is a central feature of the theory of 'Biological Relativity". It also applies to the interaction between organisms and their DNA, and between DNA and their environment. In all cases the interaction is both ways and organisms are not isolated systems. Biological Relativity means everything ultimately connects with each other. Every part of the network can be the prime mover and can be the cause of forcing the rest of the network to adjust.[7] Noble points out that in any living system the idea that there is some specific part which is the prime mover is wrong. It has a network which functions dynamically and there cannot be any privileged location within the network.

Memory in Nature- Morphic Resonance and Morphic Fields of Rupert Sheldrake -

Rupert Sheldrake has challenged the mechanistic and inert understanding of nature which was part of modern science for a very long time. His hypothesis asserts that natural laws are more similar to evolving habits and are embedded into nature. Since the 1920s many developmental biologists have proposed that biological organization depends on fields, variously called biological fields, or developmental fields, or positional fields, or morphogenetic fields. All cells come from other cells and all cells inherit fields of organization. Genes are part of this organization but they cannot explain the entire organization. Genes enable organisms to make particular proteins and other genes are involved in the control to make particular proteins. Sheldrake's hypothesis suggests that evolution is not solely the result of mutations and natural selection, rather morphic resonance plays a very important role in it. Morphic Resonance and Morphic Fields is a hypothesis of formative causation which asserts that memory is inherent in nature. The so-called laws of nature are actually more like habits. Rupert Sheldrake developed interest in developmental biology and reading of Charles Darwin for whom the habits of organisms were of central importance.[8] Rupert Sheldrake asserts that for the understanding of the development of plants, their morphogenesis, genes and gene products are not enough. Morphogenesis also depends on organizing fields. The same arguments apply to the development of animals. Rupert points out that presently most developmental biologists accept the need for a holistic or integrative conception of living organization. Without a holistic or integrative conception biology becomes directionless and especially the onslaught of data which will be generated out of the genome being sequenced or with characterization of new proteins. Rupert asserts that the morphogenetic field identifies the patterns out of the random data and factors. The morphogenetic field helps in understanding the reason behind why some microtubules crystallize in one part of the cell and remain dormant in other parts. Morphic resonance is a
Method of transmission of collective memory of the species. Rupert points out that each individual is capable of drawing and contributing to the collective memory of the species.

Failure of Human Genome Project-

Denis Noble asserts that the Human Genome Project has not been able to fulfil its promise of revolutionizing medicine. He was critical of the gene-centric view of disease of this project and surmised that its failure lies in neglect of physiological and organism -level interactions. Noble gives the example of heart failure which cannot be simply reduced to the genetic defects and it will require a physiological

7 D.Noble , A Theory of Biological Relativity: no privileged level of Causation , Royal Society Publishing . 9 November 2011.

8 **Rupert Sheldrake , Morphic Resonance: The Nature of Formative Causation** Paperback – September 9, 2009

perspective to such kinds of diseases. Nobel Laureate James Black in his work ***the Logic of Life 1993*** has predicted which now is becoming more and more real. James Black claimed that the 21st century would witness the triumph of physical over molecular biology. Presently failure of the human genome project is testimony of the wall which molecular biology has hit. Black asserts that physiology offers the true logic of life which exists at the higher levels in the organization of the living systems.[9] Therefore reduction of living organisms and their existence to the level of genes and DNA is wrong. Black points out that realization of this flaw will help in challenging the reductionist epistemology which has now ensconced not only bioscience but also in philosophy, politics and economics.

Stuart A. Kauffman- Non-ergodic Universe

Prof. Stuart A Kauffman points to the Bauer's principle of sustainable non-equilibrium' to assert that all living things have a special organization of non-equilibrium processes. This state of non-equilibrium requires a constant input of energy and matter to avoid equilibrium because equilibrium will mean death for any living organism. This is the fundamental difference between the living and non-living matter. Living organisms exist in an environment within which they exchange energy and matter. He describes the living things as "Kantian whole" in which the parts exist for and by means of the whole. Therefore he rejects the application of the nomothetic approach to bioscience which follows the principle of reductionism. Humans exist by coordination of our parts which work together to sustain human life. He propounds that all living systems create an enabling environment for evolution and evolution is not reducible to the cause and effect method of physics. Stuart Kauffman asserts that the existence of hearts and all other biological structures like kidney, liver and lungs arises from the inherent properties of a non-ergodic universe and the process of life's emergence. [10]He points out that living organisms should be seen as "Kantian Wholes", which ensures the existence of their parts without which their own survival and proliferation is impossible. Stuart Kauffman contrasts his approach to the prevalent reductionist view that focuses solely on molecular interactions. He asserts that living organisms have organs and these organs perform functions. Kaufman believes that functions are the reason that biology cannot be reduced to physics. Humans have 150 bacterial species in their gut, most of them are living with one another. All these cannot be understood with the reductive approach which Richard Darwkin has adopted for understanding the living system.

. He gives the example of different possible functions of a screwdriver and points out that functions of screwdrivers are not infinite rather it is indefinite. Context and environment plays a very important role determining the functions of an article like a screwdriver or an organ. He asserts that functions of an object or an organ are indefinite and are measurable only in nominal scale which makes them beyond the reach of any algorithm. Kauffman asserts that human minds can adopt an algorithmic approach but it's not always an algorithm. Computers are nothing but algorithmic and therefore any kind of Artificial Intelligence cannot replicate human consciousness. There is no 'phase space' or boundary conditions in biological evolution because every time a new function arises the phase space itself changes in an unpredictable way that means there cannot be any written differential equations of evolution without the relevant variables.[11] There is no law of the becoming of the biosphere because there are no boundary conditions (of person, organism, bacteria living in guts, E coli,) therefore we cannot integrate them and Newtonian reductionism is not applicable in their context. His concept of "adjacent possible" suggests that living systems are capable of exploring vast potential states and every new state leads to opening up of new possibilities. This process of evolution cannot be understood by predetermined laws of physics and this process relies on the enabling capacity of the living systems. He propounds the concept of autocatalytic networks of molecules in which their existence depends upon interdependence and cooperation. Kauffman points out that in these autocatalytic networks of molecules each molecule catalyzes the formation of others which is a testimony of the fact that life's molecular machinery could have emerged from a simpler chemical process. Life according Kauffman has blossomed with spontaneity rather than following any principles or norms. Unlike the case of physics and statistical mathematics in biology we don't have laws and boundary conditions.

9 **C.A.R.Boyd (Editor) & D.Noble (Editor) , Logic of Life: the Challenge of Integrative Physiology, Oxford University Press, 1993.**

10 Stuart A. Kauffman, A World Beyond Physics: The Emergence and Evolution of Life, Oxford University Press, 2019.

11 Stuart Kauffman, Beyond Pythagoras: No Laws Entail Evolution (2016) , The Konrad Lorenz Institute (KLI) Austria.

We cannot mathematicise the becoming of the biosphere and ecosystems. Nomothetic view of science that there must be some inherent reducible laws of any field or science needs to be rejected in the context of bio-science in the view of Professor Kauffman.

Conclusion-

Metaphysics defines the boundary and parameters within which all kinds of human inquiry is conducted and therefore if metaphysics is corrected it will be beneficial to both science and humanities. Science has been held hostage to the nomothetic approach since the times of Newton and it has unleashed a search for universal reductionist rules in all the disciplines of human knowledge. This reductionist search for laws has compartmentalized human understanding into different special disciplines. In politics Thomas Hobbes and John Locke established their metaphysics on the basis reductionist understanding of the matter and world. The entire edifice of Marxism was based on economic reductionism and search for the scientific understanding of human society. Domination of physics and mathematics has been dominated by the bio-science and definition of living organisms. This is the reason early scientists like Francis Beacon defined Earth as inert and non-living. Human centric view of the world led to the exploitation of animals and nature on the altar of human progress and rationality. The Gaia hypothesis has challenged the mechanistic paradigm of understanding the Earth and points at the umbilical relationship between living organisms and their inorganic surroundings.