Scientific - Analytic Theory Of Life And Death Systems

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Abstract

Life and death are some usual natural phenomenon known to human beings since long time. Humans cannot control them. Life is complex in nature. Such happenings make us believe about the existence of some super natural power. An effort has been made to understand these happenings on the basis of a new scientific theory based on order and disorder concepts. The roles of time 't' (order parameter 'O') and energy parameter (disorder parameter 'D') towards the actions of life and death systems have been investigated. Interesting results have been observed. The existence of some super natural power, a time dependent entity has been realized. There are openings for life sciences and medical sciences to explore other secrets of nature.

Key Words: Order and disorder systems, Life and death phenomenon, Super natural power energy (Cosmic energy) , transformations of different energies, Nature and Universe systems , Heisenberg Uncertainty Principle and its extension, Evolution of universe and evolution of life.

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1. Introduction: All living beings on earth possess same physical principles of conservation and transformation of matter and energy. Sun is the main source of energy on earth. Energy in each and every entity of our planet earth directly or indirectly is supplied from sun. All the existing elements on earth and in living beings are in a transformed form from sun radiation. Life is maintained by transformation of energy from the sun. Working of living things is complex in nature. The creation of life like the creation of universe is also based on matter - energy equivalence phenomena ($\epsilon_E = mc^2$, where m is the mass and c is the velocity of light), which follow random behaviour and occur multiple axtivities in the form of quantum energy packets inside the life system with different wavelength, λ, which is in turn related to temperature, T as $T \rightarrow f(E) \rightarrow f(1/\lambda)$. 'T' is a disordered parameter.

The existence of earth and living things on earth depend on sun as the well known different constituents (soil, water, energy, space and air) of life have been made up largely from elements carbon, oxygen, hydrogen, nitrogen, sulphur, phosphorous, calcium, sodium, potassium and iron. Hydrogen is the basic element by which other elements are believed to be formed. These elements make up molecules of living things. Not only this, but our ecosystems are shaped by the non-living environment of land and water-solar radiation, rainfall, mineral concentrations, temperature and topography. The rate of dying and decaying of all organisms is the same as that at which new life is being synthesized. Thus, the total living biomass remains constant. There is a cyclic flow of materials from old to new life, and henceforth there is an irreversible flow of eneregy from captured sunlight into dissipated heat. The second law of thermodynamics is able to describe the natural tendency towards decay, disorganization and death. In an act of creating something, a certain amount of energy is required such that the disorder energy generated is more than the order created, i.e., some excess energy is left over. There is no space in this universe where energy is created and stored without further disorder occuring. Also the point of destruction and creation is the same-"black hole". This is a belief that some super natural power / cosmic energy is

responsible for the creation and destruction of the universe.

In earlier studies [1, 2] important roles of the quanta of energy (photon) and a protein molecule have been observed in the condensation process occuring during the evolution of universe and evolution of life, respectively. Protein molecules in human body are the basic building block [3] of life. Evolution of universe and then evolution of life provide a unifying principle for understanding the history of the creation of universe and life (flora and fauna). The evolution of life is based on the concept of the relationship among all living things and their life dependence on the physical environment, i.e., species are linked with a multitude in an ecosystem. All living cells of all self-replicating life forms have similar types of complex molecules that are involved in the basic activities of life. A protein molecule along with a DNA molecule and other associated molecules constitute a living cell [4]. A single cell is the originator of other complex cells right from bacteria to elephant species. The cell molecules are composed of atoms of small number of elements as mentioned above. Carbon atom has a tendency for linking up different molecules of anion group due to four valency bonds. The formation of protein molecules and their function depends on its sequence of amino acids. Similarly, the genetic information encoded in DNA molecules provides instructions for assembling protein molecules. The code is same for all life forms. The variation in the pH surrounding the amino acids present at the active site of an enzyme that participates in the reaction affect the H^+ ion concentration and indirectly the biomolecules involved. The variations of temperature and ionic concentrations may bring changes in the activity of DNA molecule, which later brings alterations in protein. Thus, operation of a single cell may be affected by this. In a biochemical reaction a large part of entropy of activation (ΔS) arises

due to hydration. In such reactions [5] (for example the denaturation of proteins and inactivation of enzymes) the Gibbs energy 'G' plays important role, as the rate constant is directly proportional to [exp ($-\Delta G$ / Energy)]. Biochemical activities taking place during production of life and death processes reveal the beliefs of the existence of some superpower which control them.

2. Theory: In general, no phenomenon, whether short-term or long-term, is wholly determinate or wholly indeterminate. The Dual Nature-Action characteristics of matter and radiation in corpuscle form and in wave form is an example of it. The cyclic order of an action [6] or the stability of natural order develops through regularity or continuity of action, i.e., periodocity. An Action occurrence arises from the union of energy and time, whose product has the dimension of Planck's constant 'h' (h= 6.55×10^{-27} erg.sec), which for a photon (quanta of energy, $\epsilon_q = h \upsilon = h / t$) denotes an elementary quantum, a responsible quantity for discrete individuality and dual characteristics.

A new scientific theory [7, 8] based on order – disorder concept has described in integral form the Heisenberg Uncertainty relation as

$$\iint f (E,t) \Delta E. \Delta t = (1/2 \pi) = \iint f (D,O) \Delta D. \Delta O, \quad (1)$$

which agrees with the Heisenberg result:

$$\Delta \upsilon . \Delta t = (1 / 2 \pi) \qquad (2)$$

υ is frequency and t is time. Here 'O' is a symmetrical and periodic quantity (for order of Nature) and 'D' is an unsymmetrical quantity (for disorder or randomness or entropy). Here the author introduced the concept of a probability distribution function f (E, t) in the Heisenberg Uncertainty Principle ($\Delta E. \Delta t \rightarrow \geq h / 2 \pi$, where h is Planck's constant) of atomic systems. This was in order to bring the integral space for all the existing systems of Nature and the Universe in line with the Order- Disorder Scientific theory. The validity of eq. (1) has been observed earlier [1, 2, 6, 9] in interpreting the evolution of universe and life and in the various

analytical considerations of scientists as Planck, Heisenberg, De Broglie, Bohr and Einstein.

Human body is composed of such elements, which already exist in sun's atmosphere and on earth. Their atomic vibration for Order-Disorder Transformation (ODT) is followed by quantized energy:

$$E_q \; = \; E_q \, (T, t) \; = (k_B \, / \, c) \, (\lambda \, T \, / \, t) = (k_B \, / \, \upsilon) \, (T \, / \, t) = (\epsilon_T \, / \, t), \qquad (3)$$

The quantized particle of ODT energy is pronounced here as lifton, which possess order and disorder characteristics both. ϵ_T [$\epsilon_T = (\lambda \, / \, c)$ $(k_B \, . \, T)$] is pronounced as SYA constant and ϵ_c [$\epsilon_c = (\lambda \, / \, c \, t) . \, k_B$] as equivalent thermal capacity constant. The dimensions of 'h' and ϵ_T are same. Similarly the dimensions of 'k_B' (k_B: Boltzmann constant) and 'ϵ_c' are same.

3. Methodology and Results: Here, an effort has been made through this study to investigate the action occurrences (energy x time) in the life and death activities of human physical body systems. Life develops in a disordered state. Its union with super natural power energy provided order and disorder characteristics both to a life system. The state of death of a life system is an ordered state. For life systems, the distribution function f (E, t) is given by

$$f \, (E, t) \; = \exp (E \, / \, \epsilon_E) \; \exp (- \, \epsilon_W \, / \, \epsilon_E), \qquad (4)$$

here $\epsilon_E = mc^2$ and $\epsilon_W = \epsilon_q + E_q + \Delta G$. Here G is Gibb's energy function, which for protein molecule $\Delta G = \Delta H - \Delta S$. H is Helmoltz energy function and S is entropy. During the fertilization of egg the Gibb's energy ΔG (employed due to evolution of life [2] characteristic) and Lifton energy E_q (employed due to ODT) work as a resource energy in zygote development. Lifton works for the activities like beating of the heart etc in the embryo development. There is a particular period of time when energy ϵ_q (employed due to evolution of universe [1] characteristic) in form of

super natural power generates basic activities in life systems like a catalyst in a biochemical reaction. In a biochemical reaction, a large part of the entropy of activation (ΔS) arises due to hydration, while for dry substances like dry plant or dead body $\Delta S = 0$. For a life system its value lies between 0 and 1. By substituting the corresponding values of ϵ_E and ϵ_W in eq. (4) and using the obtained value of the distribution function f (E, t) in eq. (1) of Order- Disorder scientific theory, we obtain an equation of the form

$$\iint \exp (E \, / \, mc^2) \; \exp [\{ - (h \, / \, t) - (\lambda \, k_B \, T \, / \, c \, t) - \Delta G \} \, / \, mc^2] \, \Delta E. \, \Delta t \; = \; (1 \, / \, 2 \, \pi) \qquad (5)$$

Finally we obtain

$$t \; [\, mc^2 - (\epsilon_T \, / \, t) \, \ell og \, t - (h \, / \, t) \, \ell og \, t \,] \; \exp [(E - \Delta H + \Delta S) \, / \, mc^2] \; = \; (1 \, / \, 2 \, \pi) \qquad (6)$$

Both form of the energies S_E [$S_E = (h \, / \, t) \, \ell og \, t$] and L_E [$L_E = (\epsilon_T \, / \, t) \, \ell og \, t$] show logarithimic behaviour. Both follow infinite and zero values at t = 0 and t = 1, respectively. S_E is depending on order parameter 't' only while L_E on order parameter 't' and disorder parameter 'T'. It is noticeable that in eq. (6), when the sum of logarithimic quantities S_E and L_E equals to mc^2 or in exponential term the numerator (E - ΔH +ΔS) equals to mc^2 the equilibrium of life system disturbed. Consideration of the condition (E - ΔH +ΔS) = 0 or E- ΔG = 0 is against evolution principle. For the sustainability of life, E- ΔG > 0, which is evolution disordered characteristic. S_E corresponds to nature, an ordered characteristic of evolution of universe. L_E corresponds to order and disorder characteristics both. Universe [7, 8] is the creation of nature and it forms a disordered system with existing matter and energy as disordered entities. The laws of nature can't exist without time. The existence of nature (an ordered entity) is itself a manifestation of time. It can be believed that something exist beyond time, which has transformed itself periodically leading to the apparent creation and destruction.

This is very similar to Einstein's mass- energy conversion of universe (a disordered entity) and Descartes theory of rationalism.

Until the quantities of left hand side of eq. (6) balance the right hand side quantity $1 / 2\pi$, the possibility of existing life is there. As body temperature goes on decreasing and $T \to 0$, $\Delta S \to 0$, $L_E \to 0$, the eq. (6) indicates the tendency for the occurrence of death. At these conditions eq. (6) provides

$$t \left[mc^2 - (h / t) \log t \right] \exp \left\{ (E - \Delta H) / mc^2 \right] = (1 / 2\pi) \qquad (7)$$

How different energies vary according to time 't' , it is very interesting to see. The behaviour of time factor with respect to energy factor describes an exponential decay, which reveals that for $t \to 0$, energy contribution in action process moves to ∞ value while at very large span to zero. It reveals the fact of decaying process of energy as life span increases. At the moment of failure of life the system follows:

$$S_E = (h / t) \log t = mc^2 \qquad (8)$$

$$\text{And } E - \Delta H = mc^2 \qquad (9)$$

When lastly $\Delta H = 0$, there is lost of internal energy and body attains the complete death state. Simultaniously the ordered form of energy S_E also leaves out. At this point there occurs

$$E = mc^2 \qquad (10)$$

It shows that there is complete conversion of mass into energy.

4. Conclusion: A complete ordered state of matter (an ideal state) is attended at zero mass, zero temperature and zero energy position being atoms at stationary state (silence). The displacement of time brings about agitation in atoms and thermal vibration develops, which enhance the temperature, energy and mass in matter. Ultimately randomness (disturbance) in behaviour of matter and radiation develops, i.e.,

order – disorder transformations are responsible for producing particle and wave characteristics (dual nature) in matter and radiation both, which is supported by third law of thermodynamics. It can be concluded that the failure of life and tendency for the occurence of death situation arises due to disorders decaying situation, which indicates that firstly $L_E \to 0$, then $\Delta H = 0$ and lastly S_E in form of some super natural power energy goes out. S_E worked as catalyst indirectly quanta of energy in activating L_E and ΔH, a reality of evolution process. Time and temperature both play important roles in the attainment of life (disordered state) and death (ordered state). Also we observe that after death there is complete conversion of mass into energy, the reality of Einstein's mass- energy equivalence principle. More openings are still there to learn about the secrets of life and death systems for the researchers of life sciences and medical sciences. Not only this but in future we hope that the scientists would understand clearly many secrets of Nature and Universe.

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