

Evolution in "Bio-Quantum Physics"

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Evolution is traditionally a question of biology and "evolution by natural selection" is the approach conceived by Charles Darwin.(1809-1882)

After, C. S. Peirce (1839-1914) proposed a triadic definition of evolution that can be written as follow:

"Evolution is synonymous with Property (X) emerging from Precursor (Y) through Apparatus Z
Statement (1)

I try to generalize this concept of evolution in Bio-Quantum Physics by conceptualization of Information energy as a Quantum Basic Level generating Free energy, (E) and matter, (M) or condensed energy. (See Paolo Manzelli papers in **The General Science Journal**.)

Thus accepting that in origin, every event can be thought as a form of codified energy as well, we define three fundamental forms of energy, in place of the simple duality of energy and matter that are :

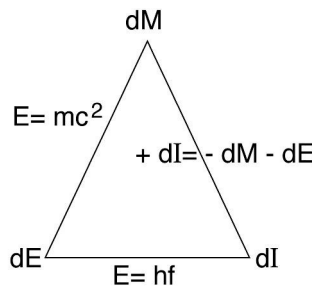
1) - Free Energy codified by vibration (E) , 2) - codified Energy in form of Matter (M) and 3) - Information –energy (I), that it is related to the fundamental Information activities.

Therefore as a consequence of the fundamental postulate of science, "Energy cannot created or destroyed", we can write that the fluctuant variation (d.) of the sum of the different codifications giving the total energy, needs to be equal to zero: i.e. $\langle d.(E) + d.(M) + d.(I) = 0 \rangle$.

Following this way of reasoning, it is possible to derive a significant solution of the above equation, named the Fertile Evolution Principle:

$$\langle + d.(I) = - d.(E) - d.(M) \rangle.$$

Note: (E), can be substituted by $\langle E = h f \rangle$ with, $f = \text{frequency}$, and(M) can be extracted from: $\langle E = Mc^2 \rangle$.



FERTILE EVOLUTION PRINCIPLE

The above formula give a generalised meaning to the evolution of complex systems because it shows how ever-increasing Information (+ d. (I)) is balanced by the decrease in flows of energy

(-d. (E)) and/or of matter (- d. (M)). This **Principle of Fertile Evolution “PFE”**, can be applied to any dynamics of transformation, because it can be considered a general pathway for any evolutionary changes from not living, to living complexity in nature. In fact this principle addresses the direction of the energy flow transformation in every interaction among dissipative structures, working in terms of matter and energy transformation, oriented by the catalytic information activities. It is clear that the **“PFE”** follows the same criteria of minimum energy performance that occurs in the traditional physics, but in this *new triadic approach of the <E,M,I>* paradigm, if the “*minimum of energy*” is reached, the “*maximum of Information activity*” is achieved at the same time.

Therefore the Principle of Fertile Evolution says that Evolutionary Development is possible when it corresponds to an increase of Information Energy (I) in respect to the decrease of Free-Energy (E) and/or Matter Condensed Energy Consumption (M). In that case, the evolutionary natural processes go on.

Following the above reasoning, Statement (1) can now be represented diagrammatically in a new way as shown in diagram 1 :

	(Y) = Precursor/Origin = Information Energy (I)
	EVOLUTION =
	(X) = Properties – Derived by Bio-Q. Phys.: see:www.egocreanet.it)
	(Z) = Theory-Apparatus = Principle of Fertile Evolution

Diagram 1: A triadic definition of evolution.

It is suggested here (Y) is related to Firstness, (X) to Secondness, and (Z) to Thirdness in the triadic metaphysics of C. S. Peirce

This Comment is referred to in the paper: What Means Life

See: <http://www.edscuola.it/LRE.html>.