

SELF-ORGANIZATION and ENERGY CONVERSION -Quantum –Bio-Physics (II – part)

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Simultaneity in mirror's perception: overcoming the aesthetic of object isolation.

Self-organization plays a crucial role in energy conversion as for instance, in natural photosynthesis, where the micro world interacts on a macro-scale of matter/energy to combine light-harvesting of solar energy and transformation into chemical energy. (1)

A general problem for controlling *self-organization* is to find a long-range process able to coordinate information exchange, to get a synchronic activity between different cooperating molecular structures. The problem of all forma of “*information exchanges*” is now a critical barrier to scientific understanding of energy conversion .

Certainly, all processes of self organization becomes active outside of equilibrium thermodynamic conditions, so that to predict and control the future organization of any kind of dynamic changes, it becomes necessary to advance comprehension of the role of *information exchanges* in defining *Self-Organization* properties that control the *Energy Conversion*.

Speaking about *information* needs a preliminary clarification about the different conceptions referred to the term, “*information itself*”. A first distinction from the point of view of the observer is briefly outlined by a duality of conceptual associations **a)** information can be considered as a kind of encoded energy or **b)** information can be thought of, as embodied in the form of matter. In this way of thinking *information* is suitable to be recognized through appropriated receptors.(2)

Differently, from the point of view of *Self-organization* systems, active “*in-formation flow*” , needs to be considered as something that precedes any possibility of taking a new form of energy (e.g. an energy conversion) or a transformation of matter. Therefore an active “*in-formation flow*”, needs to be defined and elaborated as a fundamental level of energy.(3) The last definition can be conceived if we focus our attention on “*passive and active information exchanges*” .

In fact, if *information* is encoded in vibration-energy or embodied in forms of matter, in both cases the communication of information can be obtained through *energy transmission or the*

transfer of matter from one location to another in Euclidean space-time. Another way is to be considered when *in-forma-tion flow* becomes the active generator of *self-organized patterns of energy conversion and/or matter transformations*; in that case, it becomes necessary to develop a new approach to reasoning in science, not related to the arbitrary dichotomy between observer and external observables.

It is a pity that contemporary understanding of nature is often limited by the mechanistic - paradigm of observability, that it is not based on an explicit interpretation of what is meant by observing on the basis of the effective *eyes/brain* capability of observation. The best strategy to go beyond mechanical reductionism is contemporary research driven by the *trans-disciplinary* approach searching for the completeness of *Quantum Bio-Physics* in order to find a more complete correspondence between human intelligibility and that of the physical world (4) It is important to remember that in Quantum Mechanics (**QM**), the fundamental argument is that *quantum phenomena* have no fixed values until they are observed; but **QM** admits that other *non-observable forms can exist*; if some new experiments can confirm that, some hidden values are not completely indeterminate (i.e., not explained at a deeper level), so that it become probable to conceive of a new paradigm where there exists a *more elevated level of consciousness* that creates an extension of objective reality.

A fascinating experiment for enhancing *Quantum Bio-Physics* is the “*entanglement of Quantum wave-particles*”, firstly conceived by Erwin Shroedinger in his booklet “*What is Life*” (1935), and after, experimented by Alain Aspect (1982). In fact the “*entanglement effect*” shows a spontaneous down-conversion of energy permits getting a “*simultaneity*” of information-communication. (5), (6), (7)

Under some circumstances, as in the *coherent-resonance in a cavity*, an ultraviolet photon can spontaneously split into two lower-energy infrared photons; for instance, it is known in the case of blue photons that undergo a ‘*down-conversion*’ inside a crystal, they form two lower-energy red photons that are entangled. Besides confinement of Q. energy in a *nano-cavity (or dot-cavity)*, lowering the degrees of freedom, works as a resonator generating the superposition of Q. waves associated with the Q. particles; therefore the *entanglement effect* produces a dense-coding information based on a “*non-local field*” of super-dense information. (8)

The above *entangling effect* of wave/particles, is the main resource in *quantum information processing*, with powers that exceed those of classical communication and computation. So that recently, “*Q. Entanglement*” becomes the basic resource for energy conversion in “*Teleportation in Q. communication*”. (9)

Therefore we can subdivide *information communication* into two subsets : **a)** - the first is the traditional transmission of encoded energy, within the limit of the speed of light between two different space locations , **b)** - the second belongs to a long distance *simultaneity of communication* of dense coding energy, that is generated by the *entangled effect*, producing a parametric down-conversion of information energy. (10)

The crucial difference between the two subsets is that **a)-** in the first case, information as recognisable form of codified energy, can be transferred like a signal exchange, after a previous interaction through a *direct local contact*. between energy and matter, **b)-** while in the second case, the information energy represents an extraordinary probability of exchanging energy at large distances, *simultaneously through a Q. entanglement effect*, without the need of having a previous direct contact or mechanical collisions. Those information subsets, are both *natural ways to exchange information* in that both exist to get a *synergy of information exchange nature*. This conclusion is of great importance in the development of *Quantum-Bio Physics* in relation to the

understanding of living organisms. Suffice it is to understand, and important, is to say that all life exists on our planet, in *two forms of exchanging of information* , **1**)-the *super-dense- encoded* simultaneity of non-local exchange of information energy, and **2**) - the *embodied* information in DNA, as Genetic Material, transmitted through the usual processes of biological inheritance-conservation in a living being. (10) As a consequence, *Quantum-Bio-Physics* can develop a *paradigm shift* driven by a new relationship between the *different forms of information* in order to enhance the general knowledge of the self-organization of life beyond our known mechanical boundaries of Science .(11)

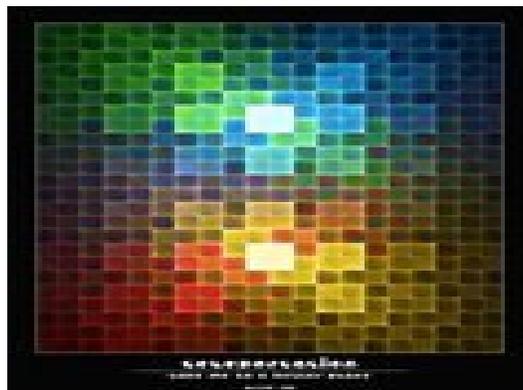
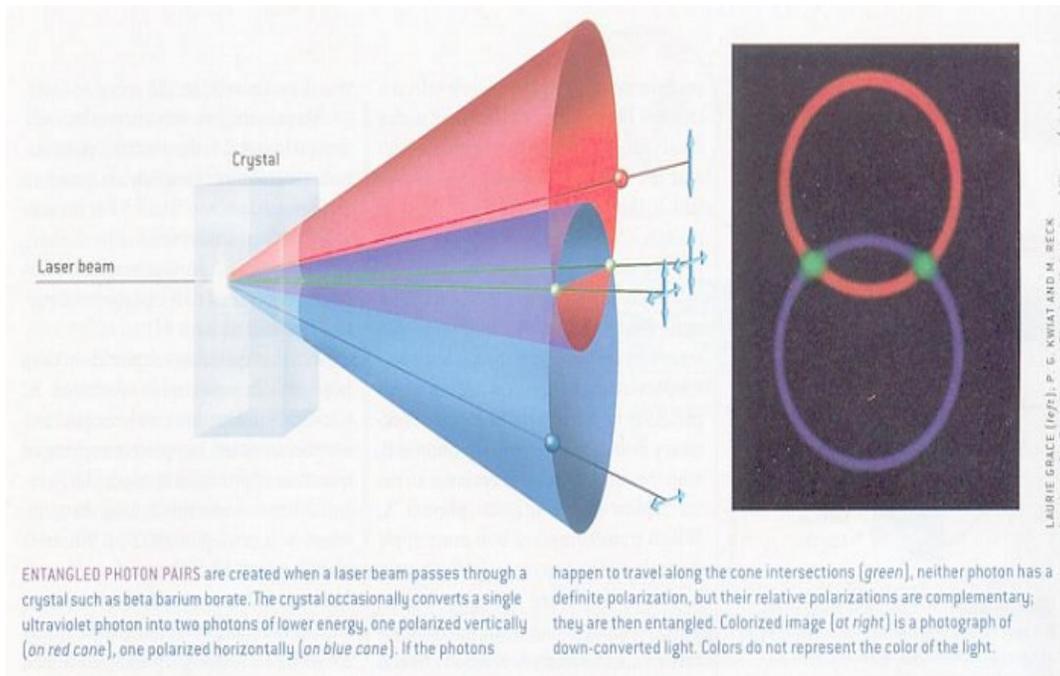


Teleportation is magic od scientific ?

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