

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

Paolo Manzelli <pmanzelli@gmail.com>

www.egocreanet.it

www.edscuola.it/LRE.html

www.wbabin.net



Simultanety 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 micro world interact on a macro-scale of matter /energy interactions to combine light-harvesting of solar energy to get its transformation into chemical energy. (1)

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

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

Speaking about *information* need a preliminary clarification about the different conception referred to the term "*information itself*". A first distinctions 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 as embodied in the form of matter. In this way of thinking the *information* is suitable to be recognized through appropriated receptors. (2)

Differently, from the point of view of *Self-organization* systems, active "*in-formation flow*" , need to be considered as something that precede any possibility to take a new form of energy (e.g. an energy conversion) or tacking a transformation of matter. Therefore an active "*in-formation flow*", need to be defined and elaborated as a fundamental level of energy.(3) The last definition can be conceived if we focus our attention about the "*passive and active information exchanges*". In fact, if *information* is encoded in vibration- energy or embodied in forms matter, in both such cases the communication of information can be obtained through the *energy transmission or the transfer of matter*, from a location to another of the Euclidean space-time. Another way is to be considered when *in-formation flow* becomes the active generator of the *self-organized patterns of energy conversion and/or matter transformations* ; in that case become necessary a new approach on reasoning in science, no more related to the arbitrary dichotomy between observer and the external observables.

It is a pity that contemporary understanding of nature is often limited by the mechanic - paradigm of observably, that it is no based on a explicit interpretation of what means observing on the basis of the effective *eyes/brain* capability of observation.

The best strategy to go beyond the mechanical reductionism is the contemporary research driven by the *trans-disciplinary* approach searching for the completeness of *Quantum Bio-Physics* in order to find a more complete the 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 the **QM** admits that other *not observable forms can exists*; 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 a new paradigm where exists a *more elevated level of consciousness* that creates an extension of objective reality.

A fascinating experiments 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**" show an spontaneous down conversion of energy permits to get an "*simultaneity*" of information-communication. (5) ,(6),(7)

Under some circumstances, as the *coherent-resonance in a cavity*, an ultraviolet photon can spontaneously splits into two lower-energy infrared photons ; for instance it is known the case of blue photons that undergoes though '*down-conversion*' inside a crystal to form two lower-energy red photons that are entangled together. Besides confinement of Q. energy in a *nano-cavity (or dot-cavity)* , lowering the degrees of freedom, works as resonator generating the superposition of Q. waves associated to the Q. particles; therefore the *entanglement effect* produces a dense-coding information based on a "*no-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 is the basic resource of energy conversion for "*Teleportation in Q. communication*". (9)

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

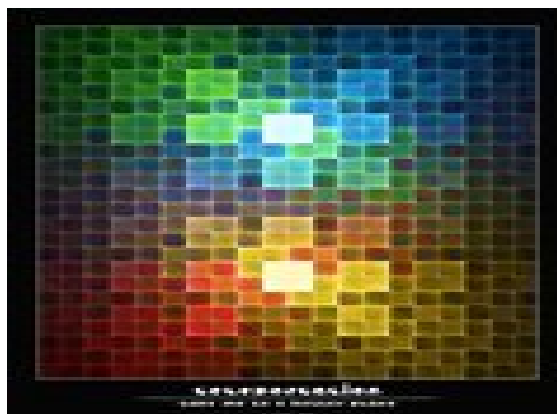
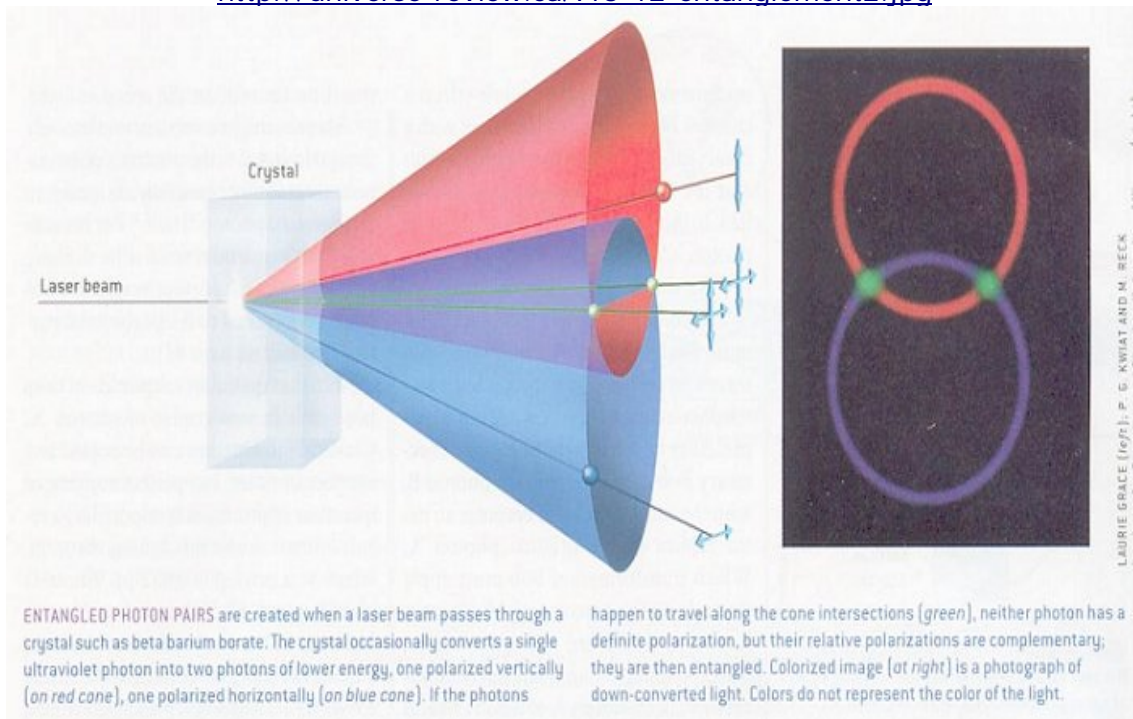
The crucial difference between the two subsets is that **a)** in the first case , information as recognisable form of codified energy, can be transferred like signal exchange, after a previous interaction through a *direct local contact* , between energy and matter, **b)-** while in the second case the information energy represents an extraordinary probability of exchanging energy at large distance, *simultaneously through an Q. entanglement effect*, without a need of having a previous direct contact or mechanical collisions. Those information subsets, are both *natural ways to exchange information*, in that both exists to get *synergy of information exchanges nature*. This conclusion is of grand importance in developing *Quantum-Bio Physics* in relation o the understanding of living organisms. Suffice it is to understand that importance, is to say that all life exist on our planet, in *two forms of exchanging of information*, **1)-**the *super-dense- encoded simultaneity of no 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 the *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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Paolo Manzelli <march/26/2008 Florence>