

## DNA -MUSIC : Rationale for New Research in Science & Art

**Abstract :** The concept of genes acting as part of a musical composition, rather than the usual metaphor of that correlates gene-building blocks and the musical notes, develops an alternative way of thinking of how genes operate the simultaneity of communication in living systems .

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**Synesthesia between music and colours**

### **Premise**

The critical evidence of brain functioning, developed by the EGOCREANET//ON-NS&A as a producer of thinking processes, convinced us to conclude that science miss a key element now named “**Information Energy**” from our current understanding. In other words the reduction of *mechanical science* to the relationship between Energy and Matter, use too much of the Occam’s razor principle. So that traditional science to day is not more able to focus the fundamental aspects of understanding living growth and life evolution.

Therefore the EGOCREANET // ON-NS&A during the year 2009 , would approach to new research proposals, on “**DNA&MUSIC**”, starting to grow up a *new scientific paradigm* ,as need to bring science and aesthetics in terms of an integrated knowledge, tacking in consideration the relationships among *three forms of Energy* e.g **Energy, Matter and Information** , in order to definitely overcome the old “*mechanicistic paradigm*” in order to develop and to reinterpret Science in terms of *BIO-Quantum Physics research*. (1)

### **DNA and music? What is the connection?**

A primarily correlation between the coding structure of DNA sequences and music codification was explored in a great ammount of simulations, made starting from the studies of immunogenetics

(2) Also proteins are based on regular sequences of amino acids, so that it is also possible to realize some similarity among music and the proteic structures. So that DNA and Protein sequences can be transposed and analysed into rhythmic and harmonic music (3)

### **Therefore can be open a new question ?**

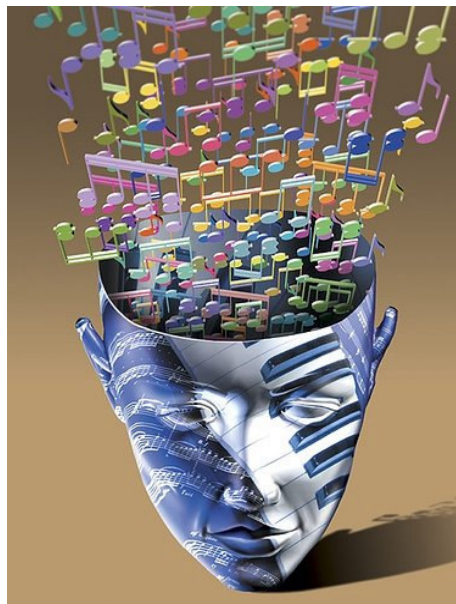
"The genetic code" can generate artificially of sound's messages that can be coordinated with the generation of protein's musical messages. Then become possible to think that also in nature the codification in music can be used to process information between DNA and Proteins, in similar way that a series notes produce sounds that we ear like harmonies and rhythms.(4)

### **But what kind of sound is working in a living cell ?**

This new insight into the nature of morphogenesis firstly find a reply by Prof. **Peter Garaiev** [garaiev@aha.ru](mailto:garaiev@aha.ru) He develops a theory to treat the genome as a holographic bio-computer that generates endogenous *solitons* ( *solitary acoustic or electromagnetic waves, respectively of sound and light* ) to carry 4D epigenetic (alternative coding) information that can be used by biosystem's communication for spatial and temporal self-organization. (5)

*Solitons* are extraordinary type of waves, generated under non-linear wave propagation, as happen in the sea during a storm, when suddenly emerges an abnormal giant wave . It is easy to understand that the propagation of *Solitons*, in a non-linear regime, can be too much ruled by a probabilistic behaviour to be considered the foundation of DNA-sound, for having a communication used as ordering power and interactive control, between genes of the DNA and the self- organization of the complex metabolic activities in a living cell.

Recently the an international Group of Research chaired by Prof **Carlo Ventura** of the University of Bologna (IT) , recorded the sound of cells, and has noticed that become possible make a correlation of different cell's sounds that allows to identify if the cell is good or ill.(6) Certainly these records confirm that molecular vibrations and health can have a close relationship; but still the recording the various sounds emitted from the cells, cannot make us to understand the specific features of sound emissions, between DNA and proteins to coordinate the various metabolic functions that determine the health or sickness in the cell. The problem of music and neurons in the brain functioning is even more complex; in fact some studies of *Synesthesia*, where cross-overlapping of the function of different areas of the brain, permits to people to ear music and contemporarily seeing the change of colours and sometimes viceversa.(7)



"Researchers translate DNA code into music."

Therefore **Brain and Music** is extremely complex subject this because the brain is the center of meaning and understanding (8); in any case we know that brain effectively works within **Energy ,Matter and Information;** so that we immediately try to avoid to search the “hat” while it is on the proper head. For this goal we would overcome the traditional science models, because till now science will not enable us to understand the functioning of the neurons in the brain in relation to the emergence of thinking processing in science and art. In fact mechanical science is too limited, in the first place; *a)* for the permanence of an arbitrary separation between subject and object of perception; *b)* secondly by having considered the *information* only in terms of recognition of passive forms of Energy and/or Matter , and this approximation render us unable to understand what is the kind of energy that determined the ordering active power of genetic information that causes in advance the creation of new forms that before did not exist; thirdly *c)* inadequacy of making a constant reference for all events to a *continuum Space/Time* context, that normally remain very similar to the structural invariance of the geometry of Euclidean-world, based on three Cartesian coordinates referring to a single temporal dimension of becoming.

### ***Symultaneity of Information by Quantum entanglement***

*Albert Einstein* think as a "spooky" physics the *symultaneity of teleportation at distance* as a kind of supplementary communication field. So that he do not believe to the primary hypothesis of *Schroedinger (1935)* that “**entangled**” phonons or photons, can change the geometry of space-time generating an space surface of “**Information Energy**” where the lack of depth is determining the physical double dimensions over the time. (10)

Until the hypothesis of *Schroedinger*, can overlap (i.e to made **Q.entanglement**) as a consequence of shocks or confinement actions, Q.particles are considered , as single wave-particles moving independently, e.g. without any transformation capacity. When Q.particles are entangled, happen a Quantum transformation of space-time. As a matter of facts we know that the relationships between Space and Time are not invariant, this because the relationships between space and time change as a result of the interaction that allow to reacting system to become transformed. So , for example, every two hydrogen atoms (gas) and a atom of oxygen (gas), reacting together, form molecules of liquid water, that has different space-time dimensions in relation to the new molculat properties . Simimilarly with **Q.entaglement** ,every two Q.particles, through an “in phase” overlapping of the waves associated to the particles, cancel for destructive interference their third dimension. Therefore this wave-conversion produces through the **Q.entanglement** a deep change in

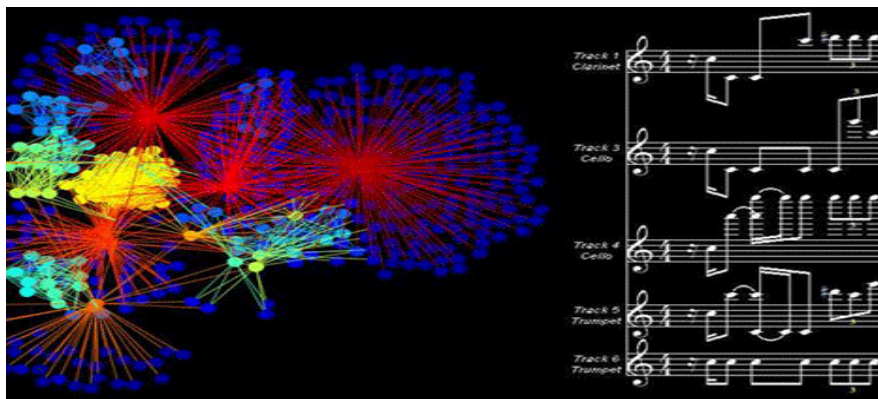
the relation between space-time, that correspond to built up a **new flat structure**, self organized in two dimensions of space plus two dimensions of time i.e. a “bit of space” and “a bit of time”, coordinates generating the new hidden type of “**Information Energy**” (EI). (11)

It is important to think that the *double dimension of time* is nothing that we cannot understand, this because there are two distinct way to look to the time : **a)** one of them (*traditional Clock time*) is a linear traveling regular sequency of instants, where *simltaneity of information* cannot exists, this because information can only be transferred from a point to another point of 3D space, **b)** and the second, (**Biological Time**) is also known by accepting that *time has a proper duration*, so that in the dynamics of an event, *simultaneity* means that the *information remain constant* during the two timing boundaries. For example, the time of *heartbeat* has developed cyclically, so that “*tick*” *sound is followed* “*tock*,” and the two signals *tick-tock*, *corresponds to* a bidimensional segment of time (t1-t2), that develop together within an oscillating biological behaviour. (*It is interesting to note that in few cases when the linear regularity of heartbeat is often symptoms of illness.*)

### DNA -ANTENNA

Following this discussion we can start to better understand the relationship between **DNA and Music**. Indeed, the DNA not only acts to transfer information through the genetic chain *DNA-RNA-Protein* thzat works in sequency in a linear time, but DNA also acts as a transmitter-receiver antenna, that *symultaneously*, communicate at a distance the oscillating “**Information Energy**” to ordering and to control the dynamics of metabolic transformation in a living system. (12),(13).

The evidence of emission of photons and phonons by the DNA has been sufficiently proved to be true by numerous specific studies, (14) but also in this case the high scattering of quantum particles, during the transfer of information, cannot be a precise mode as need for an effective *at distance ordering power* of the complex metabolic bio-chemical reactions in living systems. Viceversa through the *quantum-entanglement and the transformation in Information Energy*, because “*EI* “ *is communicable ad distance without any interference*, the ordeding at distance power can become undestandable, and this make it possible to build interactive phenomena of resonance, that *allow us to begin to understand the hidden basis of life as a sounding mode*.



Music Used to Analyze Gene Expression

[http://medgadget.com/archives/2008/07/music\\_used\\_to\\_analyze\\_gene\\_expression.html](http://medgadget.com/archives/2008/07/music_used_to_analyze_gene_expression.html)

Finally the last question is :

### From where is the inspiration drawn to create a new work of music?

Our research would reply to the last question, starting from the recent research on **DNA & MUSIC** listed in this rationale the ON-NS&A ([www.egocreanet.it](http://www.egocreanet.it)), developing an transdisciplinary research implementing the knowledge about the other question **what kind of sound is working in a living cell** ? Therefore the **ON-NS& A** group begin to seek for partners, *both in science and art*,

who wish to develop and deepen the above thi important theme .

Applications should be sent to : **Paolo Manzelli** <[pmanzelli@gmail.com](mailto:pmanzelli@gmail.com)>

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