<Space <--> Time> interchangeably in Science and Art.

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Interchangeably of space with time and viceversa in critical cycles was a fundamental idea of the ancient "**Yin -Yang**" alchemical theory of transformations in the Universe.
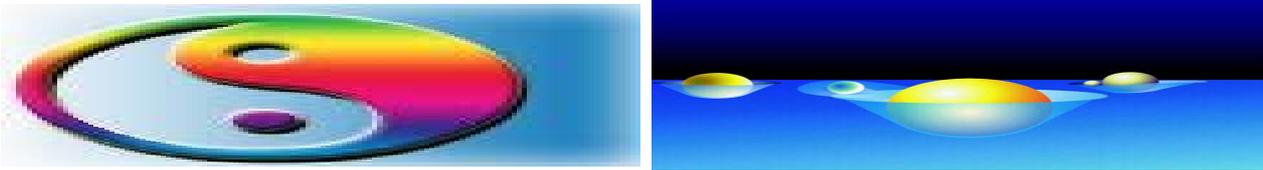
This cyclic conception, where "**Yin as Time**" and "**Yang as Space**" can exchange each with the other, was definitely substituted in the industrial era , in fact the unique frame of reference becomes based on the Euclid-Geometry (1), where the model of Space-Time is defined by three orthogonal coordinates plus one coodinate for the timing succession.**(XYZ,T)**

After the relativity proposed by *Albert Einstein (1905)* was taken in more serious consideration the three possible curvatures space geometries for the Universe. The ratio of the "*mass/energy density*" "Ω through its critical values determines the 1) *close* or, 2) *open* or, 3) *flat* geometry of space. (2)

1) An Universe where the density of matter is high (Universe/spherical space), locally parallel light rays ultimately converge . $\Omega > 1$ Curvature is positive, and space is "**close**".
2) An Universe where the density of matter is low (open Universe/hyperbolic space), locally parallel light rays ultimately diverge. $\Omega < 1$,Curvature is negative and space is "**open**".
3) Universe where the density of matter is the 'critical density' , locally parallel lines remain parallel. $\Omega = 1$,Curvature is zero, and space is " **flat** ".
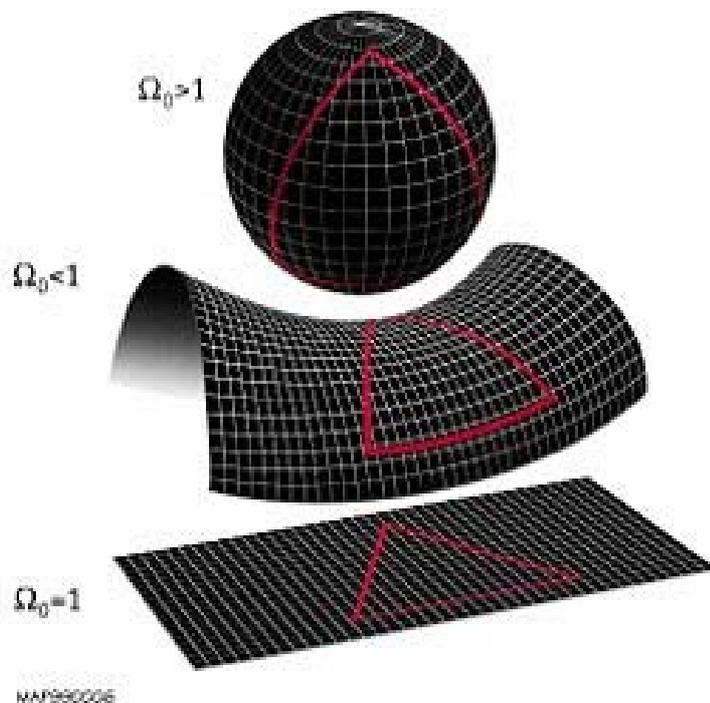

http://en.wikipedia.org/wiki/Shape_of_the_Universe

In the last century scientists became increasingly interested in the foundations of geometries with an arbitrary number of extra space dimensions e.g. overcoming the classic three dimensions .

A six-dimensional object cross section :http://space.newscientist.com/article/dn11172-satellite-

could-see-shadow-of-extra-dimensions.html
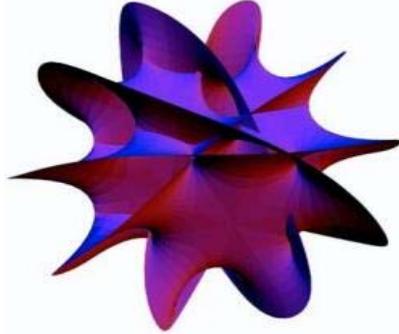
Non Euclidean Geometries of curved spaces as Hyperbolic Geometry , or Elliptic Geometry,.. are intensively studied in science and in art .

http://original.britannica.com/eb/art-322/Contrasting-triangles-in-Euclidean-elliptic-and-hyperbolic-spaces
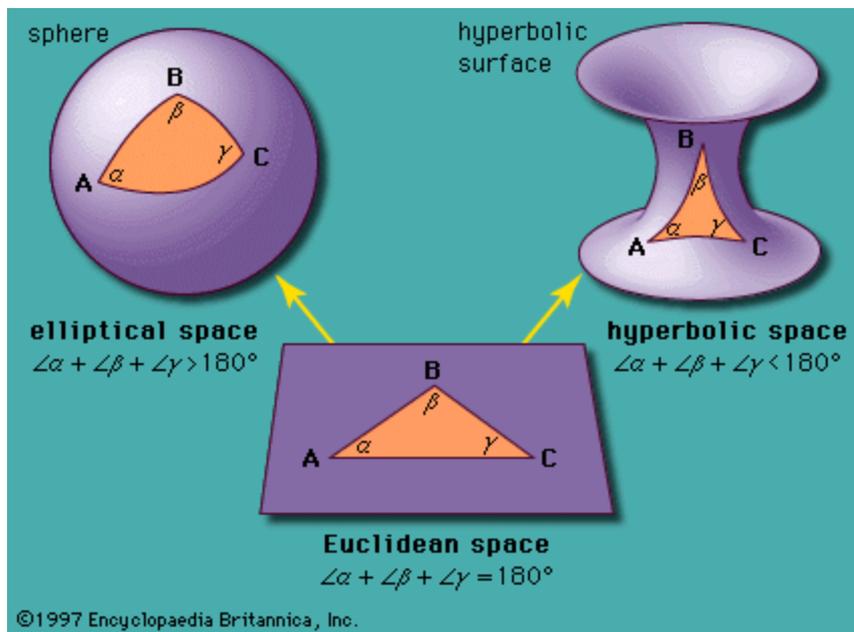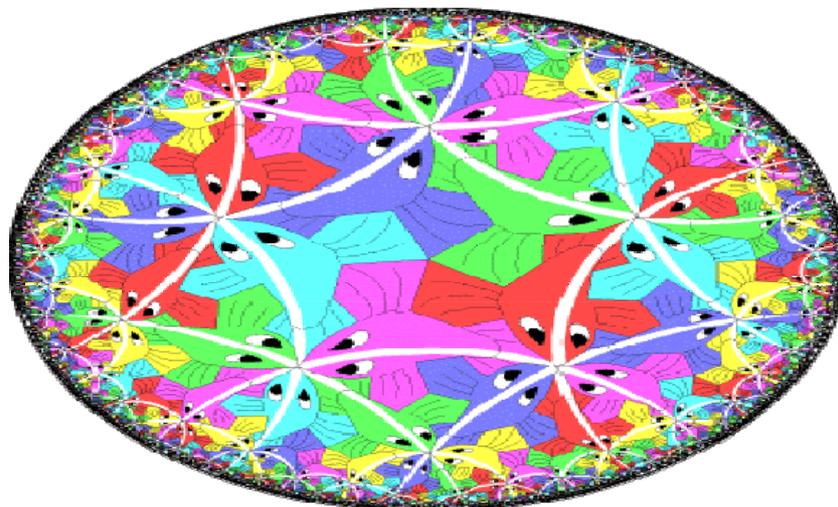
Fishes in M. C. Escher's hyperbolic Geometry: http://www.mathaware.org/mam/03/

The flowering of research on the different geometries of "*not Euclidean*" hyperspaces , has left unchanged the mechanical convention of time, measured by a "clock " and based the uniqueness of linear dimension of instants of timing succession.

Really in every epochal change both art and science involve a creative review of thinking about the relations between the events, changing accordingly the temporal structure. In fact, during the "*agricultural era*" the misuration of time was made with the "*Klessidra*"; so that the double dimension of time was shown through the cohabitation of two cyclical weather conditions, (*light-dark; hot, cold; dry, rain,...*). The hourglass in fact has incorporate in the specific form of the cyclical dimension of time flow, and so that its structural form, indicates the temporal duration which follows the rhythmic dynamics of natural events. The industrial society has instead preferred the mechanics measurement of the "**clock**", because is being more interested in movements that are repeated constantly in a shortest time ever, characterized by the acceleration of motion.

Therefore, the great sensitivity to any epochal change of modern art, has characterized the requirement of rebuilding mechanical conceptions of time as new relationship between historically events. In fact a new relationship between early-contemporary events, finds its mark on paintings by **Salvator Dali** (1904-1989) , which interpret artistically the "*expansion of space and time*" and their mutual dependence, acquired at about the same times by Science with the "*Theory of Relativity*" as was formulated by Albert Einstein. (1905).

**Dali's** *Persistence of Memory* . (*in flexible non-linear time*)

Dali's the Disintegration of the Persistence of Memory. (after the Nuclear Bomb in in Hiroshima, then Nagasaki)

http://www.terry.ubc.ca/index.php/2007/11/28/the-art-of-science-the-science-of-art/

More recent descoveries of quantum science, deeply modify the organization of space-time before considered as a continuum, based on the space defined by three vectors and only one givin the orientation of time's flow. In fact at the quantum level photons (carriers of luminous phenomenon), moves corpuscularly and in the same time possesses wave caracteristics. Light, (as phenomenon characterized by corpuscular-wave dualism), recently has shown two distint forms of „**photon-spin**" e.g. with *clock-wise* and *counter clock-wise* properties. Therefore photons emitted by a laser-clock, need to take in consideration that, syncronised beams, can be spitted, through a magnetic spin analizer,in two diffacted energy fields, according to the sense of rotation. Thus we observe that whenever we think about time, without making reference to a mechanical phenomenon, highlights the fundamental insight of the ancient idea of Chinese alchemy, founded on the double interchange between "*YIN / YANG*" in Taoism , that corresponds also in *quantum-scale* to a mutual synergy between time and space.

PHOTON-SPIN : focus.aps.org/story/v17/st15
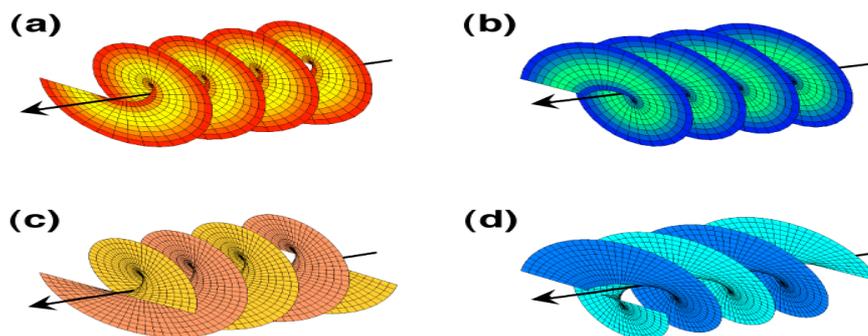
In fact, at *"quantum-scale"*, under a space-time confinement of photons, the "*entanglement*" actions can re-locating the organizational structure of the four-vectors of relativistic space-time (3). **Quantum confinement** causes a deep overlap the waves associated with particles, so that confinement actions, get some critical changes of space-time, in correspondence to the changes driven by the space sise values of confinement, among the different forms of energy ("*Ev//Em//Ei*"). So, when a beam of photons speed up to reach the wall the velocity of light, the confinement action produces the compaction of the waves, realizing the *quantum entanglement* between photons. This will implement the critical transition between the three-dimensional structure of space and only one for the time, towards the two-dimension both in

space and time (XYZ, T <-> XY, T1, T2), that characterizes the form of Information Energy (**Ei**) (4). Now, if we take into consideration,(during the process of confinement), the existence of two spins in the beam of photons, then the *entanglement action*, generates two fields **"Ei-Up" and "Ei-Down",** characterized by different properties of those bidimensional "Ei fields", driven by two opposite *clock and counter-clock rotations*. Finally, if these two fields **"Ei-Up" and "Ei-Down"** incorporate among them some photons, the *new twisted confinement* action, realizes a new critical transition of space time, which is restructuring in the following step (XY, T1, T3 <-> X, T1, T3, T3), that generates the hyperbolic composition of space time, used as a logo of the centennial of relativity that can be considered as the quantum space time structure of "*tunnelling effect*".

It is important to know that the subsequent critical transitions of the structure of space-time to *higher quantum levels*, are obtained utilizing the loss of kinetic mass of photons,(following the application of the EINSTIEN's formula " E = mc2 "), caused by the confinement which generate the successive Entanglement- actions above descibed .Finally a similar hyperbolic space-time structure can be obtained in the macro-world in the case of cosmological "**Black-Holes**".
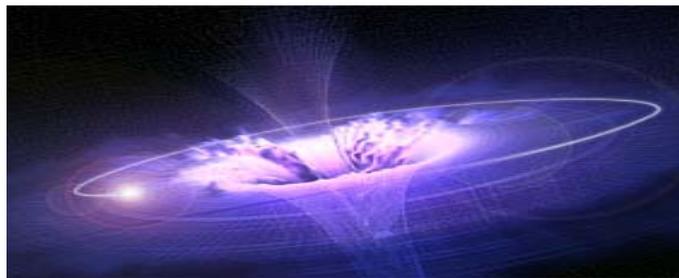
http://www.bnl.gov/rhic/black_holes.htm

The above "**insight on quantum confinement**" is based on the **"Space-Time Equivalence"** among the four-arrows. This equivalence concept follows the fundamental convinction that time and space are both fundamental driving parameters of existence , so that they can transform each to other in critical conditons, generating parallel simultaneity among three geometrical organizational structures of Space-time, in order to "*self-organizing*" the best interactive composition among the different forms of energy (**Ev//Em//Ei**), to maintain constant the "*Total Energy Principle*".

In conclusion a new world-view can be shown in connection with "***Quantum Bio-Physics***" theory; in fact at quantum scale the "***time-space equivalence***" can include the "YIN-YANG" ancient Chinese alchemy , where two two opposing yet cooperating entities of time and space , can critically exchange each to the other in the flow of the "***Universal Life***".

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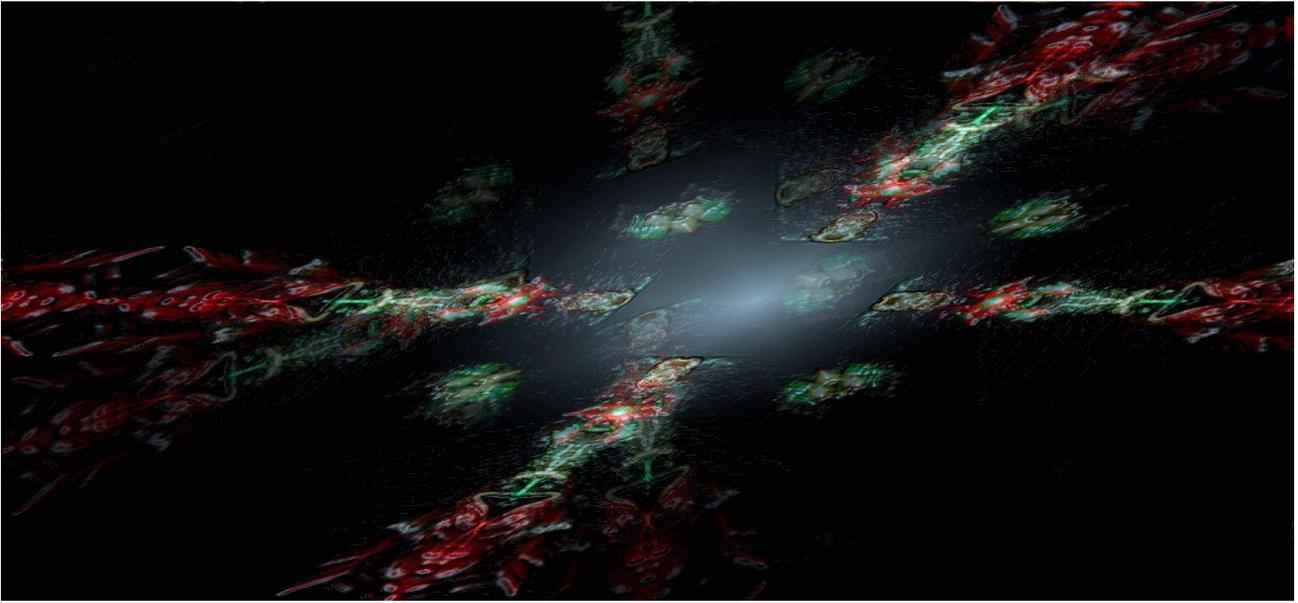
Ronald C. Blue : "The observer effects the organization/information of the fractal entanglement"

http://quantum.ibiocat.eu/eng/index.php?pagina=164

NOTE_ PHOTON SPIN & ENTANGLEMENT in different geometry-structures of Universe
http://www.astro.cornell.edu/academics/courses/astro201/geometry.htm
by-Paolo Manzelli - AUG/20/2008 Firenze

Dear friends , I appeciate your asking questions about PHOTON-SPIN in relation to my recent
paper :see
http://www.edscuola.it/archivio/lre/space_time%20geometries.pdf
http://www.egocreanetperu.com/space_time_geometries.pdf
http://www.descrittiva.it/calip/dna/space-time-geometries.pdf
and in:
http://blog.edidablog.it/blogs//index.php?blog=275
http://www.wbabin.net/science/manzelli41.pdf

- In fact it is well known that virtual spin still-stable in the vacuum has no mass and also no
  spin . In real moving photons , as "wave particles" they have a kinetic mass and the the
  "photon's spin" is described by the polarization of four vectors , so that for the particles we
  can obtained two kind of spinning (+1 =Up) and (-1 =Down) .

 - There are two types of spin particle's spin and wave's spin.
So that these double spin-states , reffering to the particle can be associated with classical transverse
polarization states for light; in fact for the associated waves we can add the connession with the "
right and left circular spinning" . Those helicity states of associated waves corresponds to the
rotation of a "right-handed" screw and on the contrary to a "left-handed" screw.

So that a single photon can have four diferent polarization states a indicated in the figure of
PHOTON's SPIN indicated with a),b),c),d).

Therefore "no mas less" ,e.g. , "real photons" experimentallly have spinning differences; so that it
can possible to measure the time in similar circular approach based on the Yin-Yang ciclical timing
critical space-time transformation.

If the a beam of photons be entangled, we get a result of a collective spin excitation in a "FLAT"
space-time dimension of (Ei) (XY,T1,T2) , that can have only two indipendent states (Up-Down)
circularly polarized to the right and to the left .

Besides two flat "Up ,and, Down Ei-Fields" can be overpositioned, so that the twisting movement
can trap other photons at the interface of , generating a new hyper entanged structure of Space-
Time, driven by a trasformation (X,T1,T2,T3) based on a *critical equivalence between Space and
Time*, in order to define, by a new linear vectorial dimension of space (X) related to three vectors
for the time (T1 = time period) , that is relative of the Circular Right heliticity (UP) state , (T2 =
second time period) , that is relative to the Circular Left heliticity (Down State) and T3 , that is the
time period of the Twisting Time-frequency of reciprocal complementary critical changes of
opposite circular-cyclic movements, in a way that both find a dynamic correspondence with a
critical recicling pulses between bi-excitation of horizontal and vertical polarizations of light.

So that through the double entanglement of a photon's beam we obtain three fundamental
quantization of the space-time four vectors generating complementary compositions ,that are giving
the possibility to correspond to a different proportionalities among the fundamental forms of Energy

(Ev//Em//Ei) that can explane the emergence of life in the Universe. see in :
http://www.edscuola.it/archivio/lre/what_means_life.htm

Many thank again . Very cordially -paolo manzelli - AUG/20/2008 Firenze
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