

About space and time, let us summarize.

In his book : *“Unthinkable Random” (L’impensable Hasard)* (edited in 2012), Nicolas Gisin says about entanglement, p. 145 : **“I wrote in this book that non local correlations seem to rise from the outer(sic) of space and time which means that no history taking place in the space during the time can tell how the nature produces such correlations.... But then, are the physicists going to give up the big task to understand the nature? “**

Still about this so strange phenomenon, Anton Zeilinger says in an article 25/05/2013 : *‘Quantum entanglement still persists between two photons even if one of them disappears’*, about a new experiment with more information on entanglement : **“It (the experience) is remarkable because it shows more or less that quantum events are beyond our daily notions about space and time “.**

Let us notice that for Gisin, the non-local correlations: *‘... seem to rise from the outer...’* but of course this is according to his point of view – determinedly realistic – an illusion. For Zeilinger quantum events: **‘are beyond our daily space and time’**, and this is no more an illusion, it would be necessary, according to his point of view, to take in account the facts. But be careful, there is a serious flat, it is the daily space and time.

Through these statements, one can see how difficult it is to cross a certain ‘Rubicond’, as regards the representation, the ontology of space-time.

The conceptual jump of A. Zeilinger is spontaneously reduced as soon as he indicates the ‘daily space and time’. It reminds the approach of Newton who had distinguished the conception of usual space and time (human) and the one which was the emanation of God : the sensorium of God.

With these statements of the two prominent scientists one hears these representatives of the ‘thinking subject’ at work, opposing resistance to the occurrence of new concepts, new paradigms. Such conservative inertia is understandable until a certain limit.

The notion of space and time is so fundamental that it is extremely difficult to move back from it because there is a risk of destabilizing the foundations which contribute to the structuration and the emergence of the thought of the thinking subject. As for myself, I know this intellectual shaking for several years during which I proposed with the proper time of the subject : $T_{ps} = 10^{-25}s$ (obviously it is approximate). The existence of the blind point of human intelligence characterized at this scale of time by a redhibitory impossibility of founding a spatio-temporal base on which the thinking subject overhangs the nature and

throw his faculties of reasoning. We must consider that the 'thinking subject' with his specificities is an integral part of a reality¹ which we build. We must incorporate him in this reality without reducing him as do inevitably the physicalists, as for instance the proposals of R. Penrose on several occasions.

With the problematic of entanglement, we have to face '**a unique quantum system**', '**a whole**' which cannot be any more observed neither thought, nor investigated traditionally. So our space-time coordinate frame is definitively obsolete. As a consequence, distances, movement, speed, are no more relevant. At the same time we have to give up any realistic thought as soon as the '**unique whole**' forces itself upon the observer, up to the point to erase the remaining thought of a supposed reality of the quantum objects which originated the entanglement.

As I propose, the phenomenon of entanglement and its consequences which we perceive should bring us to recognize that space and time are properly founded by the 'human being' and that they have no proper reality, at the opposite of what is still stated by Lee Smolin in a recent article in new scientist of 26/04/2013 : '*It is time physics recognized that time is real*'. But I share with Smolin the idea that we have to concentrate our skillfulness of physicists on the '**Present**', the '**Present Moment**', and, in my opinion² the '**Presence**'. Thus, it is necessary to highlight a (several) new paradigm(s) which would confirm this new relevant conception. For me 'TpS' fulfills this role, therefore it should be tested.

Nevertheless, I don't share the point of view of those who assert, as Carlo Rovelli, that time does not exist **anyway**. On the contrary I would say that this 'a priori' is baneful because it limits inappropriately the thought. (With C Rovelli and L. Smolin we still hear two thinking subjects at work who show their respective intellectual inertia).

I would say that, with the phenomenon of entanglement, we are on the threshold of another relationship between the 'thinking subject' conveying his own determinations and what we call the nature.

The first relationship is the one which brought us to think about what we call the classical physics which is included in the general relativity; the second one is the one which brought us to think the quantum mechanics which cannot be deciphered by a frank break

¹ See article on my blog of 21/12/2011 'Is the human being naked of any contribution...?'

² See on my blog the article of 2/05/13 'Welcome to the present moment' of Lee Smolin

with the concepts of the first because they determine us. The third one calls up an enrichment and even an overtaking of our present intelligence of the nature properties.

I can sum up my metaphysics as follows: *'Within an eternity, among all the possibles, the thinking subject digs endlessly the understanding of its universe corresponding to his capacities of deciphering'*. We have to face the task to order new capacities of deciphering to develop an enlightened speech on this third world. To a certain extent I propose a significant variation on what has been already perceived by Edmund Husserl, the founder of phenomenology, who evoked several ontological fields in a book³; I don't put forward **areas of being** establishing a reality, but, on the contrary, several areas of possibilities of constitution of a knowledge of the nature properties. Each area compels us to develop totally new faculties that we call also new paradigms. Once saying that, how to lay the foundations for new thoughts concerning new properties of the nature without referring to our usual space and time frame? Neither spatial distance nor temporal, no more speeds among which that of light! No more equivalence relationship $E = mc^2$, thus no more recognizable matter thanks to this constraint. Then: *'another matter', 'energy'*? Is that a possible explanation towards the problem of the unknown, the not understandable 95% of what is composed our universe? Is it for this reason that American scientist who designates these 95% unknown by the general term *'stuff'* point out that it is necessary to stand back with traditional concepts of matter and energy? Part of this stuff (black matter) shows some effects which may be understood as gravitational effects with our present means of deciphering. Nothing more!!

If, as I propose, we contest radically the space and time frame, general relativity says also to us that it questions our traditional conception of matter and energy because the interdependence : matter-energy-space-time is clearly stated by this theory.

Two years ago I gave to my blog the title *'E=mc² is-it-enough?'* because I was already convinced that we should think fundamental properties of the nature beyond this constraint. In that time I was mainly questioned by neutrinos. Indeed for a long time I consider that they suggested us that they are the bearer of properties not elucidated until nowadays because our cognitive frame is actually limited. Since 1930 if we make an assessment of what was said and stated about them, one should be surprised of the weakness of the knowledge acquired on those objects which always return to the specialist physicists an answer like : *'we are not what you believe'*. It is likely that some unknowns of neutrino's physic are correlated with those of *'black matter'*. For instance they have no mass which can be encrypted by E/C^2 .

³ In 1936 *'Crisis of the European science and the transcendental phenomenon'*

I don't express myself anyhow on the problem of the overtaking or not, of the speed of light because it is a problem extremely sensitive. It characterizes a speed horizon which limits our existing universe. If we think well, in fact we are basically '*beings of this light*'. On the other hand, among all the possibles there are areas in the universe where the concepts of space, time, speed, are no more consistent and if our cognitive resources allows us to invest these areas, new possibilities will enlarge the current representation of our universe. Without excluding the idea that it could be other universe(s) which would be interlaced with the one that is the more common to us today.