

## A World in 'Presence'

The answer to the question of instantaneity, of simultaneity, is not accessible to us because the '*sujet pensant*' is still there, its presence implies that there is always a before and an after that cannot be superimposed. Consequently the relativity of the moment, of the now, may not be taken into account by the observer. It does not make sense to integrate and to treat the absolute moment by the means of the special relativity equations in their usual present form. The affirmation of Einstein on the spatio-temporal coincidences is out of the reach of the '*sujet pensant*', of the physicist: "What is real from the physical point of view... is constituted of spatio-temporal coincidences. And nothing else<sup>1</sup>."

The inevitable presence of subject is characterized by the subject's proper time  $\tau_S$  which is on the order of  $10^{-23}$  to  $10^{-25}$ s and perhaps smaller yet, but it can never, of course, be confused with what is called the Planck time on the quantitative level and even more importantly, on the qualitative level. I select this order of magnitude for maximum  $\tau_S$  because, for example, it is at the level of this time interval that the problematic of the ambivalence of the real world and the virtual world is located. Some physicists believe that the particles are pure virtual constructions of the mind, providing a link between the before and the after of an interaction, while other physicists consider, given their theoretical legitimacy, that these particles are part of a reality and are not artificially conceived.

Qualitatively, the proper time of the subject:  $\tau_S$ , is:

- 1- a duration definitively unbreakable;
- 2- an existential ;
- 3- the condition of the mobility of human thought and hence, concomitantly, the condition of the language faculty;
- 4- the home, the "siege", of the 'temporalisation' of time;
- 5- an irremediable duration that human intelligence is blind to;
- 6- during this period - which has the value of a '*fault*' – the compatibility of the 'being of Nature' and the 'being in Nature' that characterizes the human being plays out;

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<sup>1</sup> Letter to Ehrenfest December 26, 1915.

**In short, no operation of physical measurement can be instantaneous, it necessarily implies a duration.**

$\tau_s$  is an unrecoverable determination (atavism), which is fundamental, first, to the human being which accordingly **determines** the emergence of knowledge of the human being with regard to the physical laws supposedly registered in Nature. More prosaically it is what we call in the corpus of quantum mechanics: *the problematic of the subject/object relation*. Inside  $\tau_s$ , time does not exist because it has no support ( $\tau_s$  is smaller or equal to the original scansion), of course it is the same for spatial dimension. My assumption is that by revisiting a number of concepts or even intangible results of fundamental physics, it is possible to highlight the occurrences that are in agreement with the hypothesis of  $\tau_s$ , to the point of showing its legitimacy. The quantum Zeno effect otherwise called : the 'watchdog effect' can be considered the first significant result.

**Two convergences identified are particularly interesting:**

Firstly with **A. Connes**<sup>2</sup> when he says: "*The space-time is very slightly not commutative, in fact the point itself in the space-time is not commutative. It has a small internal structure which is like a small key. The point has a dimension 0 at the level of the metric but with my (non-commutative) geometry it has an [Internal structure](#). And I have a non commutative space of dimension 6.*" According to the design that I developed, the point of temporal dimension  $\tau_s$  is **Structured by the presence of the subject.**

The second convergence identified concerns the quantum Zeno effect. This convergence is discussed further with the experiment: 2 that I proposed.

In considering the first convergence, we can infer that the ends of the cones of light are not formed of a tip but of a sphere of diameter  $C\tau_s$ . The world lines of quantum objects emerge from this sphere of indeterminacy, they are tangent to the limit. The world lines of entangled objects are therefore blended. In this diagram we can explain the indiscernability of intricate objects which interact during this period  $\tau_s$ . The representative laws of special relativity must be modified accordingly especially when they involve and treat the domains of the infinitely small.

With  $\tau_s$  we have an indication that the '*sujet pensant*' (the physicist) is not naked in his own contribution when he highlights the laws of nature. Contribution which may in no case

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<sup>2</sup> Professor and researcher at the 'College de France'

be erased. The world as it is, is not accessible to us. The realistic believers should revise their position. The belief that the laws of physics are the laws that describe the real world as it is outside of our 'Presence' is erroneous. The human being is in its permanence a being **of** Nature and a being **in** Nature, affirms the work of Giulio Tononi: "*The conscious faculties emerged during the course of the evolution of species, in the form of a evolutionary property, constantly in development and thanks to which humans can perceive themselves to be specific entities in Nature.*"

Two experiments could today be implemented in order to confirm or deny the hypothesis of an indelible contribution of the 'sujet pensant' in the decryption of the laws of Nature :

1- We accumulate experiments where quantum objects reveal a wave behaviour when they are circulating in the interferometers (this also applies to the macroscopic objects of sizes like fullerene molecules : C<sub>60</sub>). The absolute condition for the observation of fringes of interference is that the observer has no spatio-temporal information on the path followed by the quantum object. The observer knows that there is something in the interferometer but because he is unable to locate it, then the wave aspect (spatial expanse) appears. I propose to consider that this part of the ignorance of the observer plays an essential role. This would therefore be due to an archaic brain development that spatio-temporal ignorance would be filled by a wave representation. I propose to take advantage of the performance now attained by brain imaging and cognitive neuroscience to 'see' if there is a relationship of cause and effect due to the observer. Archaic because the part of the brain which would work when he thinks about the waveform would be different from the one which is at work for a competent (educated) observer, as a result of his acquired knowledge.

2- The other experiment concerns the quantum Zeno effect. Just recently Henry Stapp has proposed an explanation involving the specificities, according to him, of the brain function to account for the quantum Zeno effect (in 'Mindfull Universe, Quantum Mechanics and the participating Observer', edit. Springer). I am in disagreement with his approach because our ignorance of the brain and therefore of its working process is still very important and we cannot from what we believe to know about it, account for the quantum Zeno effect. On the other hand, it is certainly possible to better understand what is happening in our brain when we are an active observer of this effect. Again, this is by the means of brain imaging

that we could assess if this effect is due to the active participation of the observer in its emergence.

As soon as we have, on the quantum mechanics scale, converging and evidential indications that the properties of the nature that we decipher, are under our gaze and bearing the mark of the presence of the impregnable '*sujet pensant*', then it will be plausible to consider that this is valid on all scales. It will mean that our conception of the universe is frankly determined by what our human being capacities are capable of deciphering but nothing more.

In this case, I would be inclined to consider that our universe would be as if enshrined in an eternity<sup>3</sup> where all the other possible universes could not be excluded. (It is delicate to call these other possible "universes": universe, in the same way as ours because this would mean that they would be inhabited by intelligences capable of producing such a synthesis and that we would have heard). Among all the possibles we prefer the one which is accessible to us, because we have made it intelligible, as it corresponds to us. It would therefore be the fruit of our understanding. It is interesting to note that probably some of these other possibles already appear at the tip of the pencils of the theorists who are trying to extract the whole quintessence of the theoretical physics equations as it is currently developed. Let us quote, for example, A. Barrau<sup>4</sup> : "*We do not seek to deliberately invent multiple worlds and multiverses. But the theories we develop to solve real earthly problems lead to these vertiginous results.*"; Or again: "*They even invented the word "landscape" to describe the infinity of worlds. This leaves the place for physical laws that are radically different from ours, without nuclear forces, without light, with stronger gravity...and in the image of life in an oasis; we would be where the good conditions are met. All the others being elsewhere.*"

Our specific universe derives directly from the law of general relativity. The universe is everything that surrounds us. But since the speed of light is finite, our capacity of observation is limited. The speed of light must be understood as an anthropological determination that dwells in us. It determines a concretely unsurpassable horizon on the physical level as well as on the intellectual level. We know the transportation laws of material objects that are familiar to us from a rest position, up to speeds extremely adjacent to  $C$ . Up until the borders of  $C$  we

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<sup>3</sup> I proposed to assign the word with the same overall meaning than that which was referring A. Einstein when he stated that the human being was at the heart of a world immutable and eternal therefore invariant vis-à-vis the multiple points of view of the observers.

<sup>4</sup> Teacher and researcher at the laboratory of subatomic physics and cosmology of Grenoble (France) and at the University Joseph Fourier. Invited to the IAS Princeton

can situate ourselves concretely and intellectually. The world of light is also our intellectual horizon and the concept of the photon represents what actually constitutes the absolute upstream of the causal chain. That being said, now, we cannot directly consider the properties of nature beyond this speed. If I say 'now', this suggests that it is provisional. On the time scale of the evolution of the *anthrôpos* this 'provisional' may still take several generations of human existence. The development of our ability to think beyond the speed of light will be indirect and will come from what is already understood and mastered in our universe (perhaps this is already the situation currently!!) but for this to be consolidated, our thought must surpass our current understanding.

In addition to these assumptions S. Weinberg states: "*The Universe could be much greater than we have imagined, and encompass much more than the Big Bang observed around us. It could include different parts - by parts, I designate various possible things - with very different properties and where what we call the fundamental principles of nature might be different, and or even the dimensions of space and time would be different. There should be a major underlying principle that describes the whole, but it could be that we are much farther from discovering it than we can imagine today.*"

Let us also include S. Hawking and L. Mlodinov: "*We model the physical reality from what we see of the world, which depends on us and from our point of view. Therefore, a "realism model-dependent" seems preferable to the usual absolute realism in physics.*"... "*In these doctrines, the world as we know it is built by the human spirit from the raw material of sensory data, and it is shaped by the brain. This point of view seems difficult to accept, but not to understand. With regard to our perception of the world, there is no way to delete the observer - i.e. us.*"

For more developments see my own lectures during 2007 – 2013, access with Google: 53PH3PP6 to 53PPH3PP11, or on Blog: philipmaulion.com.