

Viviana Yaccuzzi Polisena¹

*Are Quantum Theory Questions Epistemic?*²



Topologik

EISSN

2036-5462

Suggested citation for this article:

Yaccuzzi Polisena, V. (2013), «Are Quantum Theory Questions Epistemic?», in *Topologik – Rivista Internazionale di Scienze Filosofiche, Pedagogiche e Sociali*, n. 14: 52-67;

URL:http://www.topologik.net/V._Yaccuzzi_Polisena_Topologik_Issue_n.14_2013.pdf

Subject Area:

Philosophical Studies

Abstract

How to displace-move quantum theory [Q̄] questions-problems to philosophy ? Seeing the collapse of our society's cultural-intellectual-morals, the philosophy of the 21st century has to contribute to the formation of new principles-formalisms: the big task of the contemporary philosophy ©] is to innovate, to transform the building of the knowledge! Which is the role of the contemporary philosopher? (Noam Chomsky). Building science so that it is more human, out of the scientific mercantilism so that it does not continue transgressing that which is most precious: the thought-life. The ideas that I propose demand a deep cultural-epistemologic-scientific-philosophical-ethical rethinking that goes from quantum entities up to life in society. The starting idea is «the quantum [Q̄], the paradigm of the contemporary science ©] » (Bernard D'Espagnat). I propose to displace-move questions of the quantum theory [Q̄]: spin, measure, layering to the field of philosophy (φ) to build generic symbols. Can the contemporary episteme model the collapse of the ? For a philosopher, can understanding the importance and the behaviour of the spin bring something new to philosophy ? Can information of the states of the spin be used to observe in a holographic way the pattern energy-information contained in the quantum entities? Is quantum [Q̄] physics mechanical?

Keywords: epistemology, philosophy, thought, science

I

¹ Northeastern University / UNNE - Institute for Modeling and Innovative Technology / IMIT - ARGENTINE - International Research Group: Culture, History and the State / GIRCHE – BARCELONA.

²Translated from Spanish by Francisco Beltran.

Science-Philosophy-Quantum: an epistemic question!

“Qu’est-ce qui est le plus important aujourd’hui pour faire progresser la physique: avancer dans la voie de la grande unification des interactions fondamentales, qui pousse à construire des accélérateurs toujours plus puissants, ou bien “s’attarder” à résoudre les questions d’ordre épistémologique que pose la physique contemporaine?”

Bernard D’Espagnat

“Neither waves, nor particles, but quantons!”
“Implexity, the quantum essence”

Jean.-Marc. Lévy Leblond

My objectives are: (i) show how some contemporary questions approximate science $[\Theta]$ – philosophy $[\varphi]$ – quantum $[\bar{Q}]$ by means of elaboration of generic symbols $[\hat{G}]$: (ii) approach the quantum phenomena $|\hat{F}\bar{Q}\rangle$ from an epistemic non-classical field, to abandon the epistemological crack produced by the mechanistic paradigm: ‘to remove the inner veil’ which brought the “manufacture of the consent” (Noam Chomsky); (iii) build

a quantum-philosophical $\langle \bar{Q} \boxtimes \varphi \rangle$ ‘juxta-connection’ to place the philosophy $[\varphi]$ in the interactive net of the modeling of contemporary science $[\Theta\Theta]$. Does the ‘yuxta-connection’ generate a ‘space between the spaces’ for the application of new methods? (iv) transmit to our descendants the way of producing the cognitive break: that is to say the capacity to articulate knowledge-imagination; share thoughts-feelings-attitudes-responsibilities: neo-collective codes interface of behaviour as an exit way of the abyss generated by the reductionism. In this advanced work by hypothesis « philosophons pair hypothèse » (Anne.-Françoise Schmid) the practice that drives me to an extension of the ‘philosophy’, of ‘science’, of ‘naturalisms’, of ‘materialisms’ because it operates with the figure of the generic $[\hat{G}]$. Said figure surpasses the classical forecast and expands the ‘quality purely quantitative’ of the sigmas. I attempt to propose problems that are maybe not very well known by philosophers since these problems are such large scientific revolutions and show how the notion of the generic $[\hat{G}]$ modifies the relationship between science-quantum-philosophy $[\Theta\bar{Q}\varphi]$. The philosopher of the 21st century has to break

with the fierce model of building knowledge without worrying about the costs and create a neo-structure of thought that allow him or her to face the contemporary problems by means of procedures that ‘move limits’.

*“In spite of its apparent triumphs, it may well be the case that contemporary science is not in such a good health and could even show signs of senescence”.*³

The question is to transform the way of modeling the world ‘to look with new eyes beyond classical forms’; that it is to say ‘to put the feet in the quantum structure’ and from there explain-understand nature. Is the notion of ‘Uncertainty’ a classical legacy? Yes!

The quantum systems are complex and they can not be modeled as entities in a ‘passive-vegetative-static’ state but should be modeled as ‘active-dynamic-intelligent’. Can the contemporary episteme model the collapse of the $|\psi\rangle$? To a philosopher, could understanding the importance and the behaviour of the spin bring something new to philosophy $[\phi]$? Can we use the information of the states of the spin to observe in a holographic way the energy-information pattern contained in the quantum entities?

Could the pattern energy-information contained in the quantum entities have the same structure of the human DNA? Are there ‘implexion’ of patterns energy-information of universe-human DNA? The spin becomes a contemporary epistemic intermediary in the hyper-model generic $[\mathring{Y}M\hat{G}]$ which includes humans $[H\hat{u}m]$ among its components: to understand the world is no longer to predict the phenomenons from outside of the same but in direct interaction with them. This new situation drives us to redefine-reimagine-expand the status of certain concepts-categories. The epistemic ‘yuxta-connection’ science-philosophy $[\Theta-\phi]$ gets built generating a ‘space between the spaces’, that is to say ‘the space becomes complete’. Space of functions of infinite dimension elaborated with a generic mathematical formalism which facilitates the application of new methods, as the one of (i) ‘conception’ (Armand Huchuel); (ii) ‘philo-fiction’ (François Laruelle). The idea is to model by means of inserts of ‘X operators’ applicable as a ‘bra-ket’⁴. Said ‘X

³ Lévy-Leblond, J.-M. On the Nature of Quantons. Science & Education , 2001, pp. 2.

⁴ Dirac notation.

operators' facilitate the transfer-desplacement of questions-problems from a zone to another 'yuxta-connecting' in a kinetic way epistemic fields. This way philosophy [φ] becomes placed in the interactive net of the modeling of the contemporary science [$\Theta\odot$]. Which is the role of philosophy [φ] in the contemporary period [$\hat{E}\odot$]? Without doubt, to improve the understanding of the world modeling all the systems in interaction with the human [$\hat{H}\hat{u}m$]. The contemporary philosophy [$\varphi\odot$] must separate science [Θ] from commodities, and direct it towards bringing peace. Are there philosophers that collaborate with the mercantilism of science [Θ]?

The philosophers that provide to the scientific mercantilism build 'philosophical systems without life' 'without a project' 'empty of humanism', feeding the reductionist ideas market and distorting the progress of knowledge; nourishing an egotistical monster that grows in the forgetfulness of Being-of the person-of happiness.

My starting point is that of Bernard d'Espagnat « the quantum [\bar{Q}] is the paradigm of the contemporary science [$\Theta\odot$] ». Is the 'quanton'⁵ more real that the sensitive world?

To re-build thought it is necessary (i) to get out of the mechanistic paradigm: source of the 'mercantilization of knowledge', out of the 'academy of the market' and out of the 'desvirtualization of progress'. This way, to recover the cradle of creative process, that is to say, the natural curiosity of the scientific-philosopher-artist: to attain an « actualization of the intelligibility » (Miguel Espinoza); (ii) to modify the status of the classical voices: 'hypothesis', 'model', 'problem', 'experiment', 'verification', 'progress', 'intelligence', 'inert-living'; to form a neo-agreement human-world-truth-good-freedom: that is, regenerate the synchronicity of life.

⁵ Notion of Lévy Leblond, J.-M. On the Nature of Quantons. Science & Education, 2001, pp. 3: "For indeed, quantons are novel entities! The best way, perhaps, to stress the originality of the notion is to examine it from the point of view of the discrete/continuous dichotomy".

“Ces lignes sont dédiées a tous ceux qui considerent qu’une question n’est vraiment une bonne question que si elle est plus juste que toute réponse qu’on lui connait”

Etienne Klein

Is the quantum contemporary philosophy? Is $[\bar{Q}]$ $[\varphi \odot]$?

“Les principes de superposition et d’enchèvement issus de l’analyse épistémologique quantique peuvent dès lors être généralisés et considérés comme des principes métaphysiques”.

Marc de Lacoste Lareymondie.

How to displace-move questions-problems from quantum theory $[\bar{Q}]$ to philosophy $[\varphi]$?

For this, I will start from key notions:

1) The spin. How to displace the most abstract entity that characterizes the behaviour of ‘matter’ to a quantum level? The spin is a mathematical entity that represents a ‘physical reality’ like the mass symbolizes the inertia of movement. The spin resolves several problems in quantum $[\bar{Q}]$ since it is an intermediador, an stabilizer. To a philosopher, could understanding the importance and the behaviour of the spin bring something new to philosophy $[\varphi]$? The information of the states of the spin provides the opportunity to observe in a holographic way the energy-information pattern contained in the quantum entities. Said pattern, lays in the interaction of the quarks, shows as a shadow in the screen or photographic plate.

2) The measure: the state of a quantum system is represented by $|\psi\rangle$, as in the quantum systems there is an overlay of $|\psi_i\rangle$: $|\psi\rangle = \sum_i c_i |\psi_i\rangle$. How to displace the problem of the measure to the philosophical-epistemic field? Could it not be the problem of the measure a quantum postulate? Does the problem of the measure derive from a quantum epistemic postulate? The measure is a problem because it is addressed from classical

mechanics. The contemporary philosophy [φ ©] offers ‘fictional’ solutions so that the contemporary episteme can model the collapse of the $|\psi\rangle$.

3) The inert-living: the classical definition says that the inert is that which cannot reproduce itself and the living is that which has the possibility to reproduce, giving energy to the outside transforming it. Do inert structures exist in the quantum level? Definitely NOT! We need to expand, ‘run the limit’ of this definition to displace it from the field of quantum [\bar{Q}] to the field of philosophy [φ]. In the contemporary period [\hat{E} ©], the ‘inert-living’ is a neo-category that refers to the authentic generic quantum entity generic: the ‘quanton’!

*“[...] néologisme relativement récent forgé sur le modèle des termes ‘électron’, ‘proton’, ‘photon’, ‘neutron’, etc; de fait, toutes ces particules sont des instances particulières des la catégorie générique des quantons”.*⁶

The ‘individual quantum entities’ interacts transforming themselves into ‘collective complex structures’. The collective behaviour is qualitatively different from individual behaviour.

*“...In other words, a collective state cannot be considered as a mere collection of individual states, but shows a peculiar wholeness”.*⁷

From basic laws surface complex behaviours (the principle of self-organization). The interaction provides ‘collective intelligence’ to the ‘quantum entities’. Contemporary philosophy [φ ©] can give ‘fictional solutions’ to model the self-organization of complex-intelligent phenomenons.

⁶ Balibar, Leblond, Lehoucq. Qu’est-ce que la matière? Le Pommier, 2005, Paris, pag 72.

⁷ Lévy-Leblond, J.-M. On the Nature of Quantons. Science & Education , 2001, pp. 7.

II

Innovate, re-imagine, re-discover: the contemporary challenge!

“Einstein a souvent parlé de la bêtise humaine, mais est-ce que la bêtise a un rapport avec la science? Oh, c’est une question absolument sublime! Est-ce la bêtise humaine a avoir avec la science? Oui, pour une raison simple: la science est humaine, les humaines sont bêtes, donc il y a une bêtise de la science”

Jean-Marc Lévy-Leblond

“La physique quantique porte en elle les germes d’une immense révolution culturelle, qui pour le moment n’a été réalisée qu’a l’intérieur d’un petit cénacle de grand scientifiques”

Sven Ortoli – Jean Pierre Pharabod

“...quantum objects are crazy, but they all have the same craziness”

Richard Feynman

To innovate is an inescapable human activity that drives us to know- understand the operation of the world of life. To be able to speak of science-contemporary philosophy [⊖-φ ⊙] we need to elaborate abstractions with ‘contemporary operators’ entirely different to the used in modern times. Symbols which allow us operate with a ‘logic of interactions’ to obtain kinetic N-silhouettes of the same phenomenon. I refer to generic symbols |Ĝ): this allows us not only to deduce but re-discover equations so that we can understand the ‘contemporary phenomenons’ like ‘alive intelligent-entities’.

How to interrogate a contemporary phenomenon |⊙)? How to examine a ‘contemporary intelligent system’? In order to be able to do this, we must abandon the reduccionist-classical view and advance towards a generic treatment of categories-entities: fundamental task to understand ‘objects’ that changed their own ‘molecular structure’ because of the change of scale. Neo-procedures-codes are required to build a knowledge based in kinetic interactions of epistemes. This transforms the way of building science [⊙] and of building philosophy [φ]: ‘innovating our factory’ to understand the world in a more harmonious way and advance beyond scientificist method, the prediction, the calculation and the well defined ‘quality purely quantitative’ of the sigmas. Has the modern science method been consumed by the mechanistic paradigm? Are the new methods of the contemporary science [⊙⊙] the limit of the mechanistic paradigm? The mechanistic verification is no longer effective for the ‘contemporary intelligent systems’.

Which is the contemporary way of falsifying? Here we have a criteria spin! A criteria spin is a cultural-conceptual spin that transforms the validation-falsification of the ‘scientificist committee’ in a practice of social-philosophical-ethical-artist critic-resignification. The ‘living systems’, the human [Hûm] (intelligence and collective behaviours) find their place in the generic hyper-model [ÏMĜ]. We can develop the $|\psi\rangle$ from the generic hyper model: $|\psi\rangle\tilde{M}\tilde{G}$. Said $|\psi\rangle$ groups together the possible amplitudes of probabilities of presence of the kinetic interactions of epistemes. Inserting ‘X operators’ as a ‘bra-ket’ in the space of interaction of the epistemes, we can model from a better angle what it is known as the ‘collapse of the function of wave’: this is the contemporary neo-episteme!

To use an ‘X operator’ we need to rely on the ‘generic posture’ of Françoise Laruelle. An ‘X operator’ allows us to superimpose amplitudes of probability deleting the classical problem to confine questions-problems to a single zone. The contemporary period [Ê©] is a big opportunity to renew the philosophy [φ]: to be philosophic about the complexity, the probabilities, with the ‘generic’ device [Ĝ]; that is to say to be philosophic searching for « a unitary explanation of the natural hierarchy by means of universal mechanisms » (Miguel Espinoza): this is the contemporary neo-philosophy [φ ©]! We are inventive beings; a living being only invents ‘living things’: thought lives, the episteme lives, science lives, philosophy lives: our innovations live! That our innovations live means that they evolve-interact, they are not subject to any particular model. The notion of ‘alive epistemes’ ‘yuxta-connects’ Science [Θ] questions with Philosophy [φ] questions turning them into ‘implexives’: $\langle \Theta \varphi \rangle$.

*“On pourrait alors remplacer ‘enchevêtrement’ (‘Verschränkung’, ‘entanglement’), par ‘implexion’, et, au lieu d’un ‘état enchevêtré’ parler d’un ‘état implexé’”.*⁸

The modelation-simulation of ‘alive epistemes’ becomes realized using the

⁸ Notion of Lévy-Leblond, Jean-Marc. Mots & maux de la physique quantique. Critique épistémologique et problèmes terminologiques. En Revue internationale de philosophie n°2, 243-265 (juin 2000), pp. 11.

‘transcendental structure’⁹: « *tous les outils sont indifféremment disponibles* ». With the ‘transcendental structure’ we gain access to ‘fictional-virtual experiences’; we cannot compress neither restrict that which is ‘real’ to the experiments of mechanistic paradigm! Neither is valid to continue with the dichotomies: observer / observed; exterior / interior; continuous / discontinuous; particle / wave: these opposites are the result of an inheritance ruled by a paradigm that are divided and fragmented.

The contemporary period [Ê©] abandons the classical notion of ‘punctual objects’ with fixed coordinates to build abstractions of indefinite forms such is the ‘quanton’. The ‘quanton’ is an ‘entity of indefinite spatial extension’.

“A rather natural neologism could be introduced, naming “pantopy” this spatial extensiveness of quantons. It must be stressed that the continuous nature of quantons is not limited to their spatial localisation; it holds as well for all physical magnitudes associated to space-time, such as speed, momentum, and energy”.⁸

Is the ‘quanton’ a generic intelligent form? Then, if the ‘quanton’ is a generic form, is it valid to speak of ‘quanton self values’? The same mechanical ‘expression’ remains limited to refer to the ‘quantons’: they do not have fixed forms-limits therefore they are quantum entities that are out of mechanical. The ‘quanton’ is ‘discreet-continuous’; its behaviour is ‘symmetrical-antisymmetrical’. The physical property of the ‘quantons’ is the ‘permutancy’¹⁰; this property is given because the collective state of the ‘quantons’ is not a simple sum of individual states, but a neo-structure.

«But quantons exhibit the original combination of discreteness in number and continuity in extension...».¹¹

The ‘quanton’ has an ‘intrinsic generic moment’ of N-dimension. Is the generic ‘form’ of the ‘quanton’ a ‘living-intelligent silhouette’? Then, if the

⁹Notion of Laurelle, Françoise. Philosophie Non-Standard. Générique, Quantique, Philo-fiction. Ed Kimé. 2010, p. 457.

¹⁰ Lévy-Leblond, J.-M. On the Nature of Quantons. Science & Education , 2001, pp. 6 : « Here again, a more appropriate wording would seem useful, referring to a specific physical property of the quantons; one could for instance speak of their “permutancy”, even or odd according to the symmetrical (for bosons) or antisymmetrical (for fermions) character of a collective state under permutation ».

¹¹ Ibid, pp. 3

‘transcendental structure’ works with the generic device $[\hat{G}]$ and the ‘quanton’ is an entity that tolerates the generic style; the information of the states of the spin activates the pattern energy-information of the ‘quanton’ transforming it into an ‘X silhouette’ $[\$X]$. Any ‘X silhouette’ $[\$X]$ system behaves in a generic way, there is no prohibition neither any obstacle to stop this since its state is a ‘implex state’. The problem is to find the adequate experiment to be able to model ‘implex entities’. Which is the correct experiment? A mental experiment! Mental experiments are an expansion of the experiments of the mechanistic paradigm. Fictional-mental experiments transform the status of the concepts ‘existence’ and ‘empiric’: the systems of ‘X silhouette’ $[\$X]$ show us an ‘implex extended existence’ in an ‘empiric juxta-connected’ which tolerates the property of ‘pantopia’¹² of the quanton. Is this the permanent escape from the cavern? YES!

The virtual transforms the topology creating a ‘space between the spaces’: it is the kinetic ‘juxta-connection’ of epistemes based in a trans-relacional logic: the logic of interface. The virtuality changes the philosophical landscape: it frees the philosophical categories of their classical limits: ‘impossible’ an ‘unreal’. The virtual expands the existence category in the leibnizian sense:

*“Leibniz emplea constantemente: virtual, actual. Lo virtual y lo actual, hemos visto que las empleaba en sentidos tan diferentes. Primer sentido: cada mónada, o al menos cada sustancia individual es llamada "actual". [...] ese mundo que solo existe en las mónadas que lo expresan es en sí mismo "virtual". El mundo es la serie infinita de los estados de acontecimientos, puedo decir: el acontecimiento como virtualidad remite a las sustancias individuales que lo expresan”.*¹³

Then, if (i) ‘generic is a factor = X’ (F. Laruelle); (ii) If the virtual has N-dimensions; (iii) if the spin is a mathematical entity that characterizes the behaviour of the ‘quanton’; we can develop a ‘epistemic spin’ with the category ‘generic-virtual’ to give to the quantum

¹² Lévy-Leblond, J.-M. On the Nature of Quantons. Science & Education, 2001, pp. 5 : « So it has become customary to speak of the “non locality” of quantons, as if they were deprived of the ‘normal’ property of locality. A better strategy would be to try taming the epistemological difficulty by adopting a more assertive and more intrinsic terminology. A rather natural neologism could be introduced, naming “pantopy” this spatial extensiveness of quantons. It must be stressed that the continuous nature of quantons is not limited to their spatial localisation; it holds as well for all physical magnitudes associated to space-time, such as speed, momentum, and energy ».

¹³ Hidalgo, Alberto. Realidad y mundo ¿Es cuestionable la «realidad» del mundo? En Eikasia Revista de Filosofía, año IV, (abril 2009), p. 5 <http://www.revistadefilosofia.org>.
<http://www.revistadefilosofia.com/24-07.pdf>

phenomenons $|\psi\rangle$ fictional solutions from philosophy $[\varphi]$. In the kinetic ‘yuxta-connection’ of epistemes, the displacement of the $|\psi\rangle$ of the complex models M suffers the following transformation:

$$|\psi\rangle M \xrightarrow[\text{displacement } \varphi]{\dots \rightsquigarrow} |\psi\rangle X = \sum \langle \psi | \psi \rangle^2 M = |\psi\rangle \check{M}\hat{G}$$

$[\check{M}\hat{G}] = \textit{generic hyper model}$

What this means in words: the phase of the $|\psi\rangle$ of a complex model M when we displaced it from the quantum field $[\bar{Q}]$ to that of the philosophy $[\varphi]$, changes of quality: from a complex model it becomes transformed into a generic model.

The resulting $|\psi\rangle$ adds the interactions of the probabilities of the $|\psi\rangle$ of the complex model, giving a generic hyper model as a result. The ‘X’ is the generic figure; it indicates that the structure of the ‘complex-alive phenomenons’ can be treated from N-perspective simultaneously, abandoning the spatial limits forced by the classical epistemology and the mechanistic experiment.

The idea is to obtain N-silhouettes of a same phenomenon: it is a cultural spin! The generic truths free humans $[\hat{u}m]$ of the classical truths. The hyper generic model $[\check{M}\hat{G}]$ models inserting X-operators as a ‘bra-ket’ extensible-expandibles in all directions, attaining the maximum kinetic epistemic interaction: underlays a philosophical neo-structure more unified-integral with abbreviated-universal categories. Said operation deletes the spatial confinement from the problems-questions and tries to take advantage of all the available potential:

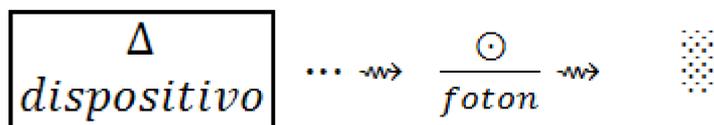
$$\langle |\psi\rangle \gg [(\alpha .X .\otimes .X. \alpha)] \ll |\psi\rangle \varphi = |\psi\rangle \langle \varphi = |\psi\rangle X = 1 \gg$$

The notation is compact-integral applicable to the $|\psi\rangle$ of quantum questions $|\psi\rangle$ and of

philosophical questions: $|\psi\rangle\langle\varphi|$, generating ‘epistemic implexion’: $|\psi\rangle\langle\varphi| = 1$;
 $a|\psi_1\rangle + b|\psi_2\rangle = 1$

Example: I am going to re-imagine, re-evaluate the experiment of the double slot displacing it to a ‘mental experiment’. In the end the idea is to understand, from a better angle, the behaviour of quantum entities. To any system of ‘quantons’ the classical resources are revolting, they do not fit in the mechanistic cultural model. It seems to us that the “quantum objects are crazy” (as it says R. Feynman) because for the last 100 years we have applied the theory-method-experimentation-concepts-logic classical model to quantum entities trying, by all means, to submit them to an mechanistic explanation that it modeled them separate from the human [ûm] as if they were passive-vegetative.

The ‘quanton’ is out of the ‘classical world’, it is like the ‘quantum angel’ of Roland Omnès. One cannot force a classical measure to an intelligent activated ‘quanton’!



The scientific way, in definite, what it does is predict based on the quantity of information held, leaving out of the utopia model, the human, the selfless, hence the explanation of said experiment is: a beam of particles goes out from a classical device towards a plate with two open slots. The particles are shot one by one so that they do not interfere with each other. In these conditions, the impacts accumulated of the individual particles are projected in a screen, or photographic plate, as an interference pattern with dark and bright zones, typical of the interference of waves. But a detector is placed in each one of the two slots to determine through which one did each particle pass before arriving to the photographic plate, then the pattern of interferences disappears immediately. That is, if we want to investigate the path, in which is a wave behaves like a localized particle: ‘the

collapse of state'. In this way we can conclude that the simple act of measuring this, changes the nature of the particle as if it knew that we are observing it, making it decide to behave either way: the wave-particle duality.

This experiment can be done with electrons (Feynman), photons (Young), neutrons, and it has even been considered to do it with viruses.¹⁴ How can an a quantum entity know the situation to which is going to be put through and based on this information build a differen type of figure on the screen? Which is the relation 'slots-quanton-plate-observer'? One answer: each photon goes through both slots at the same time and is carrier of 'knowledge of the situation' of each slots position at the moment that it impacts on the screen. In its movement, from the device until the slot, the photon does not exist as an 'only object' but as 'probabilistic figures of itself'; it then goes back to its state of solitary particle when arriving to the screen. This is why we speak of 'quantum waves of probability' which can exist in more places than one at the same time. Then the debates revolve around: 1) role of the observer, 2) degree of reality of the world in which we live, 3) ontological and gnoseological interpretations of the quantum theory. Then, the questions reveals: if the solidity of the world disintegrates in multiple probabilities, then what is real?; the solid world or the multiple probabilities? Do the 'quantum waves of probability' behave like particles to fit into our classical sense? This explanation brought important consequences towards the understanding of the nature of the quantum entities: the result of the experiment of the double slot does not fit into the structure of the classical mechanics since it is a quantum experiment. We can not extrapolate our classical experience to quantum systems. 'Quanton-slots-screen-observer' forms an 'epistemic implexión'.

The mechanical takes as an intuitive supposition that the properties of a 'quanton' are independent of the state of another 'quanton'. The 'quantons' possess the essential quantum property: implexion! It is the essential connectivity of all, which is why a quantum is not mechanical! The quantum $[\bar{Q}]$ is the contemporary philosophy $[\varphi \odot]$! This way, the contemporary philosophy $[\varphi \odot]$ is isomorphic with the structure of the quantum formalisms, with the essential properties of the quantum entities, thus making it possible to build generic symbols $|\hat{G}\rangle$. From a mental experiment, the reading expands

¹⁴ see in <http://www.wired.com/wiredscience/2012/03/particle-wave-duality-physics/>

beneficiously when including new categories with more plasticity: (i) the classical problem of the measure disappears; (ii) it frees us of the yoke of the classical verification and of “the hypertrophic experimental way” (Miguel Espinoza); (iii) it attains more intelligibility of the quantum phenomenons | \otimes); (iv) it scopes the quantum entities as ‘alive-active-dynamic-intelligent phenomenons’; (v) the two slots become transformed into a ‘bra-ket portal’ which allows us to observe the autentic ‘pantopic nature of the quantons’; (vi) it reveals the ‘implexión human-universe’: generic DNA $[DNA \hat{G}] = [DNA X]$.

When the ‘quanton’ arrives to the ‘bra-ket portal’ (double slot) a new situation is created as a result of the ‘epistemic interacion’: the two slots become tranformed into a complex unit, that is to say the two possible routes expand, they bend in an ‘implex mathematical state’ of epistemes. This new situation finishes with the dicotomies material/inmaterial, concrete/abstract, individual/collective. The ‘quanton’, being a quantum entity, contains the pattern of vibration of the folded, compacted DNA.

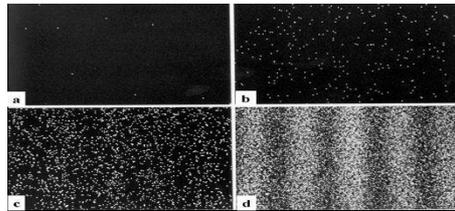
The information of the states of spin actuates the pattern of energy-information of the ‘quanton’ transforming it into an ‘X-silhouette’ [$\$X$]; what we observe in the flat two dimensions screen is the ‘shadow of an open chain’ of vibrating frequencies of energy-information: this shadow depends on the interaction that maintains the quarks joined. Why do we see ‘the shadow of an open chain’? Because the screen is flat, two dimensions, just the same as it is the wall of the cavern: in both we can only observe shadows. Still, the ‘X-silhouette’ [$\$X$] is the ‘direct observation’ of the interior of a ‘activated quanton’: the invisible becomes visible. The invisible, the impossible and the virtual: is real.

Does the pattern of vibrating frequencies of energy-information of the ‘X-silhouette’ [$\$X$] coincide with the pattern of vibrating frequencies of energy-information from the human genetic code? Yes!

There is an ‘implex human-universe state’ (what is known in classic thought as non-separability, interlacing): this way, what seems distant from one another and separate from each other (classical illusion) it falls apart since the systems of ‘X-silhouette’ [$\$X$] show the property of panthopy of the DNA: “...we are as the rest of the cosmos, or, if you

wish, the cosmos is as we are” (Miguel Espinoza). This is a more human model, a universal map: it is the attempt of re-building an authentic merciful-flexible rationality. The big challenge of contemporary philosophy [φ ©] is to model a more favourable future for life-for happiness. The philosopher of the 21st century has the duty to eliminate the existential risk that involves building technological-deshumanized knowlege whose perverse consequences affect all present and future humanity motivating the proliferation of a selfish market in which “...we lose that which makes life worthy to be lived. We can live without justice, without truth and without beauty. But the question is if life is still worth it” (Carlos Fernández Liria).

Image of the static-fixed formation of ‘the shadow of an open chain’ of DNA on the wall of the cavern (photographic plate).



“Parece que el mercado no necesita filósofos, historiadores o poetas. Sin embargo, hace falta recordar que no hay nada más interesante que lo desinteresado.

Los intereses de la razón son los intereses de lo desinteresado. No cotizan en el mercado, pero cotizan en dignidad”

Carlos Fernández Liria

“A world map that does not include utopia is not worth being looked at, because it ignores the only territory in which humanity is always docked, starting right away to a even better land... Progress is the realization of utopias”

Oscar Wilde

REFERENCES

- BITBOL, Michel. Mécanique Quantique. Une introduction philosophique. Champs Flammarion. France. 1997.
- BITBOL, Michel. Physique & Philosophie de l'esprit. Flammarion. Paris. 2000.
- BITBOL, Michel. Théorie Quantique et Sciences Humaines. CNRS Éditions. Paris. 2009.
- BUNGE, Mario. "Survey of the Interpretations of Quantum" Mechanics. American Journal of Physics, 1956, Volume 24, Issue 4, pp. 272-286.
- CHOPLIN, Hugues. La Non-Philosophie de François Laruelle. Kimé. ISBN : 2 -84174-199-0. Paris. 2000.
- DELEUZE, Gilles. GUATTARI, Félix. Qu'est-ce que la philosophie? Les Éditions de Minuit. Paris. 2008.
- DEL BUFALO, Erik. Deleuze et Laruelle. De la schizo-analyse a la non-philosophie. Kimé. Paris. 2003.
- D'ESPAGNAT, Bernard. Le Réel Voilé. Analyse des concepts quantiques. Fayard. France. 2003.
- D'ESPAGNAT, Bernard. Traité de Physique et de philosophie. Fayard. France. 2002.
- D'ESPAGNAT, Bernard ; KLEIN, Étienne. Regards sur la matière. Des quanta et des choses. Fayard, 1993.
- DERRIDA, Jacques. Positions. Collections Critique. Les Éditions de Minuit. Paris. 2007.
- GOLDSTEIN, Herbert. Mecánica Clásica. Ed. Aguilar. Versión española de Cayetano Enriquez de Salamanca. Madrid. 1972.
- GRANGER, Gilles Gaston. Sciences et réalité. Odile Jacob. Paris. 2001.
- GRANGER, Gilles Gaston. Le probable, le possible et le virtuel, Ed. Odile Jacob. Paris, 1995.
- GRIBBIN, John. Le Chat de Schrödinger. Physique Quantique et Réalité. Traduit d'anglais par Christel Rollinat. Champs Sciences. 2008.
- HARTMANN, Römer. Weak Quantum Theory and the Emergence of time. Mind and Matter, 2004. Vol 2 (2), pp. 105-125. Department of Physics. University of Freiburg, Germany.
- KLEIN, Étienne. Il était sept fois la révolution. Albert Einstein et les Autres. Champs Sciences. 2005.
- KLEIN, Étienne. Le facteur temps ne sonne jamais deux fois. Champs Sciences. Paris. 2007.
- LARUELLE, François. Introduction aux sciences génériques. Petra. Paris. 2008.
- LARUELLE, Françoise. Philosophie Non-Standard. Générique, Quantique, Philo-fiction". Ed Kimé. 2010.
- LEGAY, Jean-Marie ; SCHMID, Anne- Françoise. Philosophie de l'interdisciplinarité. Correspondance (1999-2004) sur la recherche scientifique, la modélisation et les objets complexes. Petra, Paris. 2004.
- LÉVY-LEBLOND, Jean-Marc Lévy. BALIBAR, Françoise. Quantique. Rudiments Masson. Paris. 1997.
- LÉVY-LEBLOND, Jean-Marc. A quoi sert la science? Bayard, Paris, 2008.
- LÉVY-LEBLOND, Jean-Marc. Mots & maux de la physique quantique. Critique épistémologique et problèmes terminologiques. En Revue internationale de philosophie n°2, 243-265 (juin 2000) [& Bull. U. Phys. 816, 1129-1147 (1999)].
- LÉVY-LEBLOND, Jean-Marc. On the Nature of Quantons. En Science & Education, 2001.
- LÉVY-LEBLOND, Jean-Marc. 'Neither Waves, nor Particles, but Quantons'. Nature, 334, 6177. 1988.
- MORIN, Edgar. Le débat, No. 6 novembre, Paris. 1980.
- NIKSERESHT, Iraj. Démocrite, Platon et la physique des particules élémentaires. Preface de Luc Brisson. L'Harmattan, 2007.
- OMNÈS, Roland. Les indispensables de la mecanique quantique. Odile jacob - sciences. Paris. 2008.
- OMNÈS, Roland. La Révélation des lois de la nature. Odile jacob - sciences. Paris 2008.
- OMNÈS, Roland. Filosofía de la Ciencia Contemporánea. Idea Books, S.A. Barcelona, 2000.
- ORTOLI, Sven. PHARABOD, Jean-Pierre. Le cantique des quantiques. Le monde existe-t-il ?. La Découverte / Poche. Paris. 2007.
- PENROSE, Roger. El Camino a la Realidad. Una guía completa de las leyes del universo. Debate. Trad. Javier García Sanz. México. 2008.
- PRIGOGINE, Ilya. La Fin des Certitudes. Temps, chaos et les lois de la nature. Odile Jacob. France. 2001.
- PRIGOGINE, Ilya. ¿Tan sólo una ilusión?, Tusquet. Barcelona. 1983.
- PRIGOGINE, Ilya y STENGERS. La Nouvelle Alliance, Gallimard, 1986.
- RAMUNNI, Girolamo. Les Conceptions Quantiques de 1911 a 1927. Vrin. Paris. 1981.
- SCHMID, Anne-Françoise. Les Sciences, les philosophies et la pensée : une affaire de justice. Kimé. 2005. Dand Nature Sciences Sociétés 13, 2005.
- WARNER, Pierre. Les Philosophies et la science', Gallimard, 2002.

Published in Spanish at Barcelona, 08 / 07 / 2013.
 Revista Digital de Humanidades. Revista Digital de Humanidades Sàrasuati 2.1
 With ISSN 1989-564X. Licence CC 3.0
www.sarasuati.com
<http://www.sarasuati.com/las-cuestiones-de-la-teoria-cuantica-son-epistemicas/>

Published in Spanish at Madrid, 29 / 09 / 2013.
www.lacavernadepaton.com
<http://www.lacavernadepaton.com/articulos.htm>
<http://www.lacavernadepaton.com/articulosbis/cuanticapisteme1314.pdf>