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Editorial

Understanding the Human Being from a Quantum Perspective: Lessons to Elucidate Alzheimer's Disease Pathogenesis

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Biology, and therefore medical research, essentially rest on mechanistic schemes that are reduced to studying tissues, organs and fine interactions of macromolecules (DNA, proteins, organic polymers) and bioactive compounds, but they abandon the idea of referring to the quantum phenomena. Already in 1960, the notable Hungarian doctor Albert Szent-Georgyi,[1] Nobel Prize laureate in 1937, raised in his book "Introduction to Submolecular Biology" the electronic interactions between molecules in a cell, biological oxidations, energy cycles and charge transfer problems of fundamental relevance to understanding the action of different drugs in the organism.

This would lead us to delve into the complex network of mind-body interactions, which is not the objective of this column. An example of the reductionist vision is trying to understand phenomena of the human mind by looking for topographical areas in the brain where consciousness would reside, or trying to define areas where memory is stored, for example. There is increasing evidence of quantum activity in the explanation of these phenomena. Also, how electromagnetic fields operate internally, as well as the flow of quanta and qubits of energy, or simply the changes in the coupling of energy transfer phenomena coupled to the activity of electromagnetic energy flows, in the space of brain activity.

In this context, if we want to make a leap in understanding mental processes, it is necessary to go beyond the reductionist vision that led science in the 20th century. It is impossible to have better medicine if we do not fully understand, not only the phenomena from the perspective of modern molecular biology but also how quantum transitions operate in the organism. This is a current imperative to understand consciousness as an example, in which many biologists have tried to locate it in certain brain structures. Beyond this, there are severe limitations to understanding the brain-mind and heart connection in the axis that links emotional life with purely cognitive phenomena and the rational activity of the human brain.

The works of the anesthesiologist Stuart Hameroff and the famous mathematical physicist Roger Penrose on the idea of objective and orchestrated reduction are interesting in the attempt to explain the critical role of quanta in cerebral energy flows, within the vibrational dynamics of the neurons.[2] According to these authors, the internal domains of the neuronal cytoplasm involve microtubule-type structures, where quantum information would be stored, which would seem to define the levels of consciousness. Thus, objective reduction would be modulated by events that occur in spatial geometry, which would allow us to explain the origins of consciousness.

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This leads us to think about the possible role of quantic phenomena in the chain of submolecular events in Alzheimer's disease. As a matter of facts microtubules, with a role in axonal dynamics, suffer collapse in certain Alzheimer's disease neurons. Alzheimer's disease is an example of how situations that are immersed in the world of probabilities, can materialize in molecular changes that are sustained over time and can be objectively analyzed in the concrete measurement of the growing pathological oligomerization of tau protein that occurs concomitantly. These alterations increase with the symptomatology of the disease, that could be displaced in the time of its manifestation if the person assumes their budding situation and decides to "actively" execute the already known and published recommendations that would even take to a reversal of tau oligomerization.

Quantum information would be present only as probability, as a vibratory prelude at the still energetic level, awaiting its material, concrete expression that will make it definitive, in space-time and irreducible to its previous state, which was indeterminate. This would share the probability of expression of diverse material forms that could be expressed in molecules capable of making contacts in intercellular structures to determine diverse states of mood, thought or movement in structures of the cell.

Finally, in these lines it is worth highlighting the works of the renowned doctor Deepack Chopra[3] that highlight the contribution of quantum theory in the understanding of many biological processes, with an emphasis on what refers to mental activity, of importance in modern psychiatry. Thus, beyond macromolecules and regulatory factors, we enter a stage in which the links between matter and energy and the role of quanta take on enormous vigor.

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CONFLICT OF INTEREST

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