Opinion

The mind and its countless paths

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A new and fascinating idea about the possible nature of our memory

Thanks to recent discoveries in the field of Quantum Physics, epigenetic students and neuroscientists have given birth to brand new heuristic theories. The confirmation of these theories might open the doors to their application in various scientific areas of Epigenetic and Neuroscience. The outcome of thisresearch–published on "Nature Astronomy" and led by Giovanni Amelino Cameila (physician of "La Sapienza" university in Rome) and his team–represents the first step towards the conciliation between the general Relativity Theory and Quantum Physics. "Space-time structure could be granular, just like foam: this hypothesis is the result of a preliminary statistic analysis of experimental data carried out and confirmed for the first time–after decades–by an Antarctic based Neutrino Observatory called IceCube and by Nasa's space telescope Fermi, which collaborates with the Italian Space Agency (ISA), National Astrophysics Institute (NAI) and National Institute of Nuclear Physics (NINP)." [Source : Il Fatto Quotidiano – June 7th, 2017].[1]

How could such news concern–or even be intertwined with–disciplines such as Epigenetic and Neuroscience? The authors of this article have been working on the elaboration of a theory which assumes that memory–specifically within the long-term memory proteinic register-and its structure are directly connected to precise components related to the propagation of energy waves in space-time dimension. From a purely neurologic, epigenetic and neuroscientific point of view, an implicit long-term memory register is determined by external environmental circumstances.[2]

Such circumstances determine an electro-bio-polar-as well as biochemical-waterfall-cascade, which stimulates an important element: the N-metil-D-aspartate receptor (NMDA or NMDAR). The N-Metil-D-Aspartate is a ionotropic glutamate receptor and is present on nerve cells membrane. It plays an essential role in synaptic plasticity and memory consolidation, especially for what concerns the production of LTP (Long Term Potentiation).

The cascade of events would generate an energetic alteration in the form of hertzian frequencies variations within synaptic proteins. These variations would operate atomically by changing and altering the position of electrons around the nucleus and–consequentially–by allowing electrons to design new orbitals. This process would lead electrons to design new "paths" within a space-time reality characterized by a granular density, which recalls the "foam" researchers have mentioned.

Any event is linked to the central nervous system and generates alterations that affect the atoms' electronic orbitals, which compose molecules. Molecules-in turn-give structure to neuron's proteins, particularly in the synapses of regions such as the amygdale and the hippocampus. Both of these areas possess–according to current knowledge–long-term memory registers. The suggested "foam" patterns describe space-time as a granular geometric structure due to microscopic particles. The orbitals traced by electrons would design new "paths" in the granular space-time dimension ("within the foam") responding to electromagnetic polarity which correspond to a given frequency.

Memory would be a mnemonic trace "engraved" in the dimensional reality of the protein's atomic structure. The trace's existence would last for a period which is proportional to the trace left in the space- time granularity. We would have a particular ability to remember an event-or many of them-based on the possibility of "calling the electrons back" and letting them retrace their previously impressed trails, depending on their own "depths". This could explain the great accommodation ability of mnemonic reality, which is partly linked to neurons' physical structure, and-mostly-to the possibility of transducer proteins to imprint on an energetic dimension, capable of affecting the space-time dimension through a cascade of neurobiochemical processes. The damage of a neuronal synapse could lead to the loss of portions of memory through a four-dimensional space sequence due to the exclusion of temporal parameters. Neurodegenerative pathologies could lead to the progressive disorder of trails, leaving some of them intact and accessible and others irremediably lost and cancelled.

There is an important factor that hasn't been highlighted by the researchers of "La Sapienza", but it has still been assumed by the authors of this article: the trails designed by the electrons' orbitals could probably cross one another's paths and start a connection, creating positive resonations across the various frequency bands. This process might lead to the production of a new set of mnemonic layout due to reciprocal influence. The mind and abstractive capacitors could be tightly connected to these dynamics.[3] On anepigenetic viewpoint, the influence of external factors could have an incredibly important relevance. The semantic capacity could be a result of resonant frequencies, which intercepts various space-time traces in a synaptic–neuroproteinic area.[4]

For what concerns cellular dynamics, biology demonstrates how a single cell cannot transit from a G0 to a G1 phase without Growth Factors during its cycle of life. Growth Factors are external events which trigger off a series of complex processes within the cell cycle. Environment could also be considered a very important factor in the formation of mental processes related to a granular space-time universe.[5,6]

The brain's mass is about 1.500cm^3, which is a relatively narrow ground to organize memory unit's and– contextually–superior (such as the abstraction cognitive function) and inferior units (being it limbs

mobility, deambulation, balance, etc). How could these characteristics be organized without the intervention of a relatively spatial–and simultaneously–energetic and temporal dimension? If we consider neurons and synapses' proteins as hardware capable of hosting numerous software–in space-temporal terms–there could be a chance of integrating implicit and explicit mental realities. This hypothesis is undoubtedly fascinating: the research carried out by the university "La Sapienza" in Rome leads to this direction.[7]

In a recent interview, Giovanni Amelino Camelia said: "The research has exploited a statistical approach which takes into consideration the results obtained by Fermi and Ice Cube to define the sighting frequency of particles (photons and neutrinos) having space-temporal foam properties. The statistic sample is still not sufficient to draw a final conclusion, but the quantity of data we'll have in 4 to 5 years time will give us the chance to obtain a specific theory." Probably, in a hopefully near future, we'll be able to provide reliable information concerning our theoretical statements. If that is the case, progress will make history and extraordinary scenarios lay ahead of us.

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Conflict of interest

Author declares that there is no conflict of interest.

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