Tactical Question for the Group Re Terminology In Discussing Reason and Logic

Post by “Elli” of January 22, 2021 at 6:40 PM

A few words about the quantum vacuum.

The quantum field theory proposed by modern physics forces us to abandon the classical distinction between vacuum and matter, especially since it has been shown that elementary particles can be born spontaneously from vacuum with the proper supply of energy. Emptiness is nothing, it is not non-being! Instead, it contains, potentially, an unlimited number of particles that are created and disappear non-stop. The void is actually a living void! The void has ceased to be considered the passive and non-participatory context of the play of natural phenomena and is recognized as a dynamic state of paramount importance.

I was surprised to find just yesterday that Epicurus in his Epistle to Herodotus refers to the void with the term "nature non palpate/untouched". It is indeed difficult to imagine how an ancient philosopher who knew nothing at all about quantum phenomena, thought of referring to the void as "nature", that is, something that exists and is obviously related to the other "nature of tangible things", even if it is not palpate/untouched!

The motion of particles in a world of probabilities.

Each particle can be described as a moving or stationary "wave packet", while the amplitude of a wave in a space over a period of time is related to the **probability** of finding the particle in that space at that time. Thus, two quantum particles that are ejected by the same device, under the same initial conditions, can make different paths and end up in two different places. Or two identical nuclei will split at very different times, or even into different particles.

Lucretius in "On the nature of things" De rerum natura: "... When atoms carry their own weight in a straight line down into space, at indefinite moments and in indefinite places, they deviate somewhat from their trajectory, only to the extent that you can say that the movement has changed their. "Without this deviation, everything would be directed like raindrops parallel to the three depths of the vacuum, and no contact, no collision would be made between the original elements, and so nature would not create anything ...".

Feynman: “A philosopher once said, "It is necessary for the very existence of science that the same conditions always produce the same results." Well, they don't!”

CONCLUSIONS

Modern Physics has enriched our perceptions with many new concepts and has greatly deepened or differentiated the old ones. The world continues to be described by **atoms**, but also **elementary particles** and **quanta**, all of which have structure, quantum behavior and relativistic motion, dynamics and materiality.

The existence of discontinuity in matter is what allows the formation of structures in space. The diversity of the cosmos presupposes the existence of small material parts that in combination do the things we perceive. The ability to enumerate and combine building blocks is also the basis of mathematics, that is, the understanding and conception of the world on a more abstract level.

Structures are not only **in space**, but they are also **in time**. An example of a spatially structured entity is a simple stone, but also an entire cave with stalactites and stalagmites. An example of a time-structured entity is a simple note, but also an entire symphonic music play. The objects of the world have at the same time spatial and temporal substance and structure, that is, they are **living phenomena and they fill us with admiration**!

Reference 2

From the Book: The moment of quantum - Alfred Goldhaber (theoretical physics) Robert Crease (history and philosophy of science) - ROPI Publications, 2015

“What we need is a Lucretius who will be baptized in the source of Einstein, Schrödinger and Heisenberg, to compose a modern "De Rerum Natura" and to interpret the mystery and beauty that are inside and beyond the electron and space … »

Source: New York Times, 1930

An excerpt of a work entitled: “For the understanding of Nature on the scale of the microcosm”.

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