

4. Quantum theory: what is it?

Quantum theory offers insight into two distinct ontologies that function in contemporary knowledge in their own distinct ways without crossing each other's boundaries. One world is the macro world, which is underpinned by our current physical laws of matter. The other world is the quantum world, which behaves differently and is influenced by the observer. This division separates these two worlds and creates worlds, one of which is our normal one and the other world represents the other one, which is exotic. This division can be transferred to the world of humans, for example, to queer people. Quantum theories thus offer a space that invites thinking about binary divisions and their interconnections in the social world as well. It forces us to think of a discontinuity/continuity in which the slash suggests an active and iterative approach over this discontinuity/continuity.

The second text sees the crisis in the fact that science has lost touch with the reality of the "man in the street". Science has created a mathematical multiplicity out of nature, brought into the world by Galileo Galilei. He created it on the assumption that everything real must have a mathematical index, that is, it must be translatable into the language of geometry. However, this vision presents problems because not all perceived qualities can be translated into the language of mathematics. We can mathematize primary qualities such as shape, size, position, or number, but we cannot mathematize secondary qualities such as color, taste, or warmth. At least not directly. Thus, for Galileo, the non-translatability of these qualities is proof of their non-existence. Galileo's ideal asserts that it is possible to construct a mathematical theory of nature if it meets certain criteria, such as determinism, that is, that it is possible to predict the outcome of a measurement in accordance with the theory; nondisturbance, that is, that the mathematical model is unmeasured and an ideal measurement is made without disturbing the system in question, which is done by approximating it and calculating the measurement deviations, thus not disturbing the measurement of the object in reality; and finally completeness, that is, that it is possible to measure all the properties of any physical system simultaneously. In contrast, quantum systems are not determined by the quantum mathematical state of the system, but only by the probability of the results. Once a measurement is made on an object, its state changes. And each measurement provides information about only one-half of the prediction-relevant degrees of freedom of the quantum state.

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