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PHILOSOPHICAL MODELS AND QUANTUM INTERPRETATION

Abstract

The atypical behaviour of micro physical systems cannot be conceptually understood and linguistically described without applying it to some analogous models. Among the many analogies developed in the history of quantum mechanics, some useful suggestions have been introduced by Niels Bohr in accordance both with the ancient oriental yin-yang duality and the mathematical topological concept of Riemann surface. The most effective philosophical models, however, are those conceived by Bohr himself and by Werner Heisenberg. Such models allowed to reorganise both the methodological and the ontological perspectives deriving by the seemingly paradoxical quantum conceptual exigencies.

The analogy proposed by Bohr, relating quantum methodological need of two different knowledge levels (the formal level of quantum “superposition” and the empirical one, where the wave function is “collapsed”) to the thesis of Søren Kierkegaard about a radical separation between different “stages” of existence, clarifies the characters of probability when applied to the single micro-physical event, and explains the role of the causal law in quantum mechanics.

Similarly, the Aristotelian distinction between “actuality” and “potentia- lity”, taken into account by Heisenberg, turns out to be useful when speaking about the essence of quantum events.

Nevertheless, these models seem partial and limited as philosophical tools. In order to improve our ability in understanding and explaining the new, non-classical conceptual framework, it is necessary to work out deeper analogies, as a development of those previous ones. Here a new model is suggested, based on hermeneutic philosophy.

The very *essence* of micro physical reality can be better understood in conformity with Martin Heidegger’s thought about the interaction between man – who is “thrown into the world” – and the world, which is not made of the presence of phenomena, but is the “disclosure” of Being in itself. Besides his claim of a difference between the “inauthentic existence” – where man is abandoned to the manifestation of things in the world and to their determinism – and the “authentic” one – where man recognises death as the impossibility of all of the possibilities of existence – makes more understandable the process of *knowledge* – which allows us to aim at the profound meaning of quantum reality.

In this way, an hermeneutic model opens new insights and seems to be able to contrast those paradoxes and philosophical difficulties which arose as a consequence of quantum revolution.