

Quantum Physics and Reality

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Apparent paradoxes in Quantum Physics demand a sharp distinction between a “real part of the world” and the realm of possibilities. In the former we may distinguish individual elements (coarse events) relating to space-time, with causal connections between them respecting the relativistic locality principle. The latter, quantitatively described by probability assignments conditioned on existing facts and depending on the definition of equivalence classes of situations, cannot be subdivided in space-time categories. There are global correlations (Pauli principle...). The cut between the realms of facts and possibilities implies an evolutionary picture of the “real world” in which the (generalized) arrow of time assumes basic significance. Some deficiencies of existing theory are pointed out.

Key words: Quantum Philosophy; Entanglement; Irreversibility.