Continuum: A history of repression - with a special focus on quantum theory.

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Abstract translated from:
Gerhard Grössing, KONTINUUM. Die Geschichte einer Verdrängung, mit besonderem Augenmerk auf die Quantentheorie, OeZG 16, 1 (2005) 137 - 167.

Identifying "continuum" as a key concept in history, the author establishes a physicist's view of this term, with a generally broader scope. However, when focusing on quantum physics, he produces a strong criticism both of basic theory building in quantum theory and in the historiography of this very field of scientific research.
This criticism involves the fatal distinctions between the concepts of the digital and the analogue, respectively, the maintenance of a strictly reductionist, or "atomistic", approach - as opposed to possible, more general and systemic view-points, and, consequently, the preference of research purely focussing on the particle-like rather than both the particle- and the wave-like "behaviours" on the quantum-level.
The second chapter of the article argues that the dominant pattern of interpretation, the orthodox Copenhagen interpretation, includes a highly metaphysical dimension, thereby hindering the solution of puzzles provided by quantum theory. The article pleads for a re-thinking, and re-working of the often forgotten, even repressed, but at least unjustifiably marginalized de Broglie-Bohm interpretation of quantum phenomena, which draws on a 'hidden variables' approach in full agreement with present experimental evidence.
Furthermore, the dominance of the Copenhagen interpretation is kept up not only by means of lobbying but also by means of historiography of science; supported by numerous examples and details, the author does not hesitate to describe the way this is done as 'totalitarian'.
The last chapter offers some of the alternative viewpoints, avoiding the reductionism of the orthodox school, pleading for a more complex, multi-faceted view, and including both wave and particle aspects on an equal footing. One of the arguments the author provides is by presenting, from a slightly different point of view, a recently published derivation of the Schrödinger equation from classical physics.