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**Creative Confusion. Quantum Theory on the Way to Wave Mechanics**

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When wave mechanics was formulated by de Broglie and Schrödinger in the mid-twenties, there was practically no empirical evidence for wave-like behavior of matter. What then were the motivations for pursuing an idea that was rather at odds with the discontinuity that quantum theory seemed to demand? Paradoxically, they can be found in the attempts to understand the quantum nature of light, for which just at that time empirical evidence could not be ignored anymore. In my talk, I will argue that “wave-particle duality” was initially nothing more than a confusion of competing theoretical explanations. It was in statistical mechanics where this idea first took on a more concrete form of a symmetry of two different theoretical explanations. And it was statistical mechanics that allowed this model of dual explanations to be transferred to the theory of matter. This transfer culminated in Schrödinger’s paper of December 1925 “On Einstein’s Gas Theory,” which explicitly uses the symmetry of explanations to motivate a wave theory of matter. It is here that Schrödinger’s equivalent to Heisenberg’s “Umdeutung” (reinterpretation) of mechanical quantities is to be found, not in his more famous 1926 papers on atomic theory.