Klaas Landsman (Radboud University Nijmegen)
Quantization: The Big Picture

The Big Picture arose in the 1990s from my efforts to relate Mackey's quantization theory based on systems of imprimitivity (which Mackey himself saw as the natural implementation of what he called Weyl's Program, i.e. the construction of the basic operators of quantum mechanics from group-theoretical considerations, to deformation quantization, and hence to the tradition started by Dirac, as continued by Groenewold, Moyal, Berezin, Flato, Rieffel, and others. The Big Picture is technically based on the theory of Lie groupoids and Lie algebroids. These traditions were originally both powerful but almost disjoint, and their fusion provides a complete and satisfying view of the idea of quantization or “quantum-mechanical reinterpretation” that Heisenberg started in 1925. Literature: KL, Foundations of Quantum Theory (Springer Open Access, 2017), http://www.springer.com/gp/book/9783319517766, especially Chapter 7.