A Theorist Ignored

Infinite Potential. The Life and Times of David Bohm. F. DAVID PEAT. Helix (Addsion-Wesley), Reading, MA, 1996. x, 353 pp. + plates. $25 or $C34. ISBN 0–201–40635–7.

"I seem to have only one strong emotion left—and that is hatred for the forces that have destroyed so many human beings, including myself. For relative to what I could have been, I regard myself as destroyed." So wrote the physicist David Bohm, who was perhaps our most profound thinker about the nature of quantum reality, in a letter written from Brazil at about the middle of his life in 1954.

It would be natural to conclude that the passion expressed here was a response to Bohm's treatment by the House Committee on Un-American Activities, which in 1949 cited him for contempt of Congress for his refusal to testify against his colleagues concerning their possible communist connections; and to the treatment by the powers of American academia, which, despite his acquittal in 1951, cut short his employment as a professor at Princeton University, made him persona non grata at the Institute for Advanced Study, and prevented him from obtaining serious employment as a physicist anywhere in the United States.

David Bohm. *Left,* "When speaking Bohm employed delicate movements of his hands, almost as if they were the extension of his thinking process." *Right,* "Bohm with the Dalai Lama during the Amsterdam conference 'Art Meets Science and Religion in a Changing Economic Environment.' " [From *Infinite Potential*]

But that conclusion would not be entirely correct, at least not with regard to the story told by David Peat in this fascinating biography. Rather, the deeper cause of Bohm's unhappy state of mind was the reaction of the community of physicists to what he regarded as his great achievement: a clear deterministic alternative to the indeterministic and, frankly, incoherent Copenhagen interpretation of quantum mechanics. Prior to the publication of his theory in 1952, he had been "enormously excited by what he felt was a major discovery" and wrote, "I can't believe that I should have been the one to see this," while "anticipating that the physics community would react with enthusiasm."

But his anticipation was not without anxiety. Indeed, Bohm feared that "the big-shots will treat my article with a conspiracy of silence; perhaps implying privately to the smaller shots that while there is nothing demonstrably illogical about the article, it really is just a philosophical point, of no practical interest."

To a very great extent that is what happened. The physicists Abraham Pais and J. Robert Oppenheimer declared Bohm's theory "juvenile deviationism," with Oppenheimer, who was Bohm's mentor, suggesting that "if we cannot disprove Bohm, then we must agree to ignore him." Niels Bohr's associate Leon Rosenfeld found Bohm's theory "very ingenious, but basically wrong," while for Wolfgang Pauli, according to Peat, "Bohm's whole approach was 'foolish simplicity,' which 'is of course beyond all help.' "

Having anticipated this sort of response, Bohm nevertheless had not been emotionally prepared for it—how could he have been?—and found that "the total indifference of the physics community to an important new idea 'cut at one's insides like a hot knife being twisted inside your heart.' " The philosopher Paul Feyerabend, who throughout his career relished the role of provocateur in characterizing science and scientists, was only being straightforward when he remarked that "the fact ... that Bohm's model was pushed aside while all sorts of weird ideas flourished is very interesting, and I hope that one fine day a historian or sociologist of science takes a close look at the matter."

Peat does a splendid job of weaving into his presentation this central episode in the life of a remarkable man, one of the most imaginative and controversial physicists of the 20th century, who died in 1992 at the age of 74. Bohm's version of quantum mechanics, and the reaction of the physics community to it, is a subject to which Peat repeatedly returns as he beautifully develops the progression of Bohm's thought, in ever more speculative directions, over the last four decades of his life.

However, Peat's treatment of the relevant physics is not always entirely accurate. For example, concerning Bohm's theory, it is not really true that Bohm "did not develop its full implications until the late 1970s and 1980s," or, concerning nonlocality, that "Bohm did not fully appreciate the revolutionary nature of this aspect of his theory," or that the measurement problem was "solved by Bohm's approach in the 1970s." All these things were dealt with clearly, I would say almost definitively, in Bohm's original 1952 articles. Thus, remarkably, the behavior of the physics establishment in the matter of David Bohm was even more shameful than is conveyed here. As John Bell remarked (*Speakable and Unspeakable in Quantum Mechanics,* Cambridge Univ. Press, 1987, p. 191), the de-Broglie-Bohm "idea seems ... so natural and simple, to resolve the wave-particle dilemma in such a clear and ordinary way, that it is a great mystery ... that it was so generally ignored."

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