

**HPS/PHIL 93872**

**Spring 2006**

**Historical Foundations of the Quantum Theory**

Don Howard, Instructor

***Recommended Readings:***

David Z. Albert. *Quantum Mechanics and Experience*. Cambridge, MA: Harvard University Press, 1992.

Sunny Y. Auyang. *How is Quantum Field Theory Possible?* New York: Oxford University Press, 1995.

Jeffrey Barrett. *The Quantum Mechanics of Minds and Worlds*. Oxford: Oxford University Press, 1999.

Mara Beller. *Quantum Dialogue: The Making of a Revolution*. Chicago: University of Chicago Press, 1999.

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Michel Bitbol and Olivier Darrigol, eds. *Erwin Schrödinger: Philosophy and the Birth of Quantum Mechanics*. Paris: Editions Frontieres, 1992.

David Bohm. *Causality and Chance in Modern Physics*. London: Routledge and Kegan Paul, 1957.

David Bohm. *Wholeness and the Implicate Order*. London: Routledge and Kegan Paul, 1980.

David Bohm and Basil J. Hiley. *The Undivided Universe: An Ontological Interpretation of the Quantum Theory*. London: Routledge, 1993.

Katherine Brading and Elena Castellani, eds. *Symmetries in Physics: Philosophical Reflections*. Cambridge: Cambridge University Press, 2003.

Harvey Brown and Rom Harré, eds. *Philosophical Foundations of Quantum Field Theories*. Oxford: Clarendon Press, 1988.

Laurie Brown and Lillian Hoddeson, eds. *The Birth of Particle Physics*. New York: Cambridge University Press, 1983.

Laurie Brown, Max Dresden, and Lillian Hoddeson, eds. *Pions to Quarks: Particle Physics in the 1950s*. New York: Cambridge University Press, 1989.

Laurie Brown, Abraham Pais, and Sir Brian Pippard, eds. *Twentieth Century Physics*, 3 vols. New York: American Institute of Physics Press, 1995.

Jeffrey Bub. *Interpreting the Quantum World*. Cambridge: Cambridge University Press, 1997.

Jeremy Butterfield and Constantine Pagonis, eds. *From Physics to Philosophy*. Cambridge: Cambridge University Press, 1999.

Craig Callender and Nick Huggett, eds. *Physics Meets Philosophy at the Planck Scale: Contemporary Theories in Quantum Gravity*. Cambridge: Cambridge University Press, 2001.

- Cao Tian Yu. *Conceptual Developments of 20<sup>th</sup> Century Field Theories*. Cambridge: Cambridge University Press, 1997.
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- Catherine Chevalley. "Introduction: Le dessin et la couleur." In Niels Bohr. *Physique atomique et connaissance humaine*. Edmond Bauer and Roland Omnès, trans. Catherine Chevalley, ed. Paris: Gallimard, 1991, pp. 17-140.
- Rob Clifton. *Quantum Entanglements: Selected Papers*. Jeremy Butterfield and Hans Halvorson, eds. Oxford: Oxford University Press, 2004.
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- James T. Cushing. *Quantum Mechanics: Historical Contingency and the Copenhagen Hegemony*. Chicago: University of Chicago Press, 1994.
- James T. Cushing and Ernan McMullin, eds. *Philosophical Consequences of Quantum Theory: Reflections on Bell's Theorem*. Notre Dame, IN: University of Notre Dame Press, 1989.
- Olivier Darrigol. *From C-Numbers to Q-Numbers: The Classical Analogy in the History of Quantum Theory*. Berkeley: University of California Press, 1992.
- Olivier Darrigol. *Electrodynamics from Ampère to Einstein*. Oxford: Oxford University Press, 2000.
- Bernard d'Espagnat. *Conceptual Foundations of Quantum Mechanics*, 2<sup>nd</sup> ed. Reading, MA: W. A. Benjamin, 1976.
- Charles P. Enz. *No Time to Be Brief: A Scientific Biography of Wolfgang Pauli*. Oxford: Oxford University Press, 2002.
- David Favrholt. *Niels Bohr's Philosophical Background*. Det Kongelige Danske Videnskabernes Selskab. Historisk-filosofiske Meddelelser, no. 63. Copenhagen: Munksgaard, 1992.
- Jan Faye. *Niels Bohr: His Heritage and Legacy. An Anti-Realist View of Quantum Mechanics*. Dordrecht: Kluwer, 1991.
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- Paul Forman, "Weimar Culture, Causality, and Quantum Theory, 1918-1927: Adaption by German Physicists and Mathematicians to a Hostile Intellectual Environment." *Historical Studies in the Physical Sciences* 3 (1971), 1-114.
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- Robert B. Laughlin. *A Different Universe (Reinventing Physics from the Bottom Down)*. New York: Basic Books, 2005.
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