

**H. Primas: Chemistry, Quantum Mechanics, and Reductionism.** Lecture Notes in Chemistry, Vol. 24. Berlin-Heidelberg-New-York: Springer-Verlag 1981

This is an excellent, difficult book which can only be reviewed superficially. It was a good idea to publish it in an inexpensive, widely distributed series instead of burying it in specialized series on Foundations in Physics or on the Philosophy and History of Science. Primas' aim is "to stir the water with controversy" not only by harsh remarks on numerical quantum chemistry, but by introducing a very abstract algebraic framework for theoretical chemistry.

Beginning with a foreword by Feyerabend, the book is divided into 6 chapters:

Open Problems of the Present-Day Theoretical Chemistry.

On the Structure of Scientific Theories.

Pioneer Quantum Mechanics and Interpretation. (In this chapter the customary background of textbooks is critically reviewed, it will be helpful in teaching courses.)

Beyond Pioneer Quantum Mechanics. (This chapter seems to me one-sided, as different approaches to the fundamental problems of quantum mechanics exist. Furthermore, it can only be read if one is willing to learn modern algebraic tools of mathematical physics. Interesting is the discussion of logic and quantum logic.)

A Framework for Theoretical Chemistry.

Reduction, Holism, and Complementarity.

Primas and Müller-Herold have already published some articles on the  $W^*$ -algebraic foundations of theoretical chemistry, but experiences from mathematical physics have shown that rigorous mathematics, though clarifying the foundations of a theory, will solve problems only in very few cases. What is lacking is a coupling to ordinary chemistry. Some chemical structures and reactions would be helpful to justify the advanced approach. Future developments will show whether Primas' way of arguing will lead to a better understanding of the wealth of chemical phenomena. The enormous number of approximately 1400 references from mathematics, mathematical physics and philosophy with hints to the text and a good index will be of help for active studies, but may embarrass chemical readers.

I recommend this book to the theoretician to stimulate the discussion on the mathematical foundations, and the non-mathematical parts to the interested chemist for a discussion of the historical and philosophical background of science.

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