

Rubenstein is a professor of engineering at UCLA and developed the book from a course on problem solving. The course was apparently a campus wide course and those techniques were selected that had the highest probability of attaining immortality.

On balance, I liked the book and believe that it can be a useful book for self-study. It would not be as useful as a text book because the author attempts to cover too much ground. He also demonstrates a lack of real understanding of many of the areas. He obviously did some reading and then attempted to teach the particular technique he had just "learned." The elements are not getting put together to facilitate understanding of any process.

I will illustrate my point with the subject of decision making under uncertainty. In a real sense the most important case in the study decision making, if not the only one, is decision making uncertainty. Rubenstein does several things to confuse that point and in doing so makes it clear that he understands his material as a student not as a practicing professional.

In discussing decision making in Chapter 7, he accepts the distinction between risk and uncertainty that Frank Knight first made in 1920 in his book, *Risk, Uncertainty and Profit*. Risk was used by Knight to define situations where it is possible to compute an objective probability and uncertainty refers to those situations in which an objective probability cannot be computed. This distinction was useful historically in thinking about certain decision-making problems, but it is a distinction that is not meaningful since L. J. Savage's, *Foundations of Statistics*. (This book is not listed in the extensive bibliography of books listed on pages 522 to 528. Since the list is not alphabetical, I might have missed it). Savage resuscitated Bayes and demonstrated that a Bayesian always has a probability for an event. Rubenstein does show that he is aware of the existence of subjective probabilities but never ties together their existence with Bayesian analysis. Rather he reduces the subjective probability case to the case of risk since probabilities exist. This reduction is wrong since a Bayesian would behave differently and, in fact, Rubenstein has shown such behavior, 158 pages earlier, in his development of decision tries.

In addition Rubenstein discusses sequential analysis in isolation from decision making under uncertainty. Yet for those who understand decision making behavior from either a positive or

a normative point of view, sequential analysis is acknowledged to be the most effective approach to decision making under uncertainty. It is also the most commonly used approach.

In other words, I am warning the reader that the author is a talented amateur. Thus much can be gained from the book, but it should be recognized that one is jumping from the tip of one iceberg to another. It is important for real understanding to stay on one iceberg (properly defined) and get to the part that is submerged.

Nevertheless the book is interesting as an introduction to a large number of techniques as well as to the jargon used in many disciplines. One has to admire the aplomb which Rubenstein demonstrates in Chapter 5 in discussing models. He has one section on "Models of History." In that section Freud is handled in one short paragraph while Spengler and Toynbee take one long and two short paragraphs. In this chapter he describes not models in history but also models of the universe, the atom, the brains and others. That chapter alone is worth the price of the book.

The book is well written. It has problems at the end of chapters and answers at the end of the book. Professor Rubenstein's knowledge is so vast that any reader will learn something. To go more deeply into any of the subjects he mentions more work is necessary. □

## ChE conferences

### EMULSION POLYMERIZATION

A short course on Emulsion Polymerization and Latex Technology will be offered August 27-31, 1979, in Davos, Switzerland. Additional information can be obtained from: Dr. Gary W. Poehlein, ChE Department, Georgia Institute of Technology, Atlanta, GA 30332.

### SHORT COURSE ON PRINTING INKS

The first annual one-week short course, "Physics and Chemistry of Printing Inks," will be offered at Lehigh University during the week of October 29 - November 2, 1979. This course is designed for engineers, chemists, other scientists, and managers who wish to acquire background in this subject. Further information can be obtained from: Dr. Mohamed S. Al-Aasser, ChE Department, Whitaker Lab. No. 5, Lehigh University, Bethlehem, PA 18015.