BOOK REVIEW

Random processes. By M. Rosenblatt. Oxford University Press, New York, 1962. x+208 pp. $6.00.

This book offers a business-like but substantial introduction to various topics in stochastic processes. Since it begins with the general foundations of the subject, no previous knowledge of probability theory is required. However, central topics are reached quickly and efficiently so that already on page 25, the Petrovski-Kolmogorov proof of the central limit theorem is given (the name-dropping here is supplied by the reviewer). The second chapter (which is really the first) also contains S. Bernstein's proof of the Weierstrass approximation theorem as well as the concept of entropy. Chapter 3 deals with Markov chains with emphasis on algebraico-analytical aspects. Chapter 4 contains a reasonable introduction to general probability spaces which goes as far as mentioning the Radon-Nikodym theorem, although the author pretends to swear off measure theory. Chapter 5 on stationary processes includes McMillan's theorem in information theory as well as the classical Birkhoff ergodic theorem. Chapter 6 on Markov processes gives Feller's construction of transition functions for discontinuous Markov processes, together with elements of diffusion theory including the Ornstein-Uhlenbeck model. Chapter 7 deals with the harmonic analysis of weakly stationary processes and prediction theory. Chapter 8 contains additional material such as the author's mixing condition.

Although certain "unpleasant" (this is the author's word) questions are passed over, the omissions are justified if one wants to get down to business "fast," as one would once in a while for everybody and most of the time for "most everybody" (I trust the expressions in quotes are in the third edition of Webster's New International Dictionary). That is to say, for the potential reader except for the very sophisticated and the true devotee of the modern probability school, this textbook will serve the useful purpose of showing him the field. In general, the treatment revolves around analytical questions and formulae rather than description of sample sequences or functions. The perspective of *random processes* would have been made somewhat more vivid if a few simple examples of the latter kind, say the recurrence properties of Markov chains or the continuity of the Brownian paths, had been treated. These are within the scope of the book and could be used to illustrate the basic notions discussed in Chapter 4 and elsewhere. Without these examples there is a slight gap between the concepts and results discussed in the book.

Style is a highly subjective matter, but the reviewer found some unwarranted awkwardness in exposition. To cite two innocuous but disconcerting instances: "Thus in $\mathbf{x}^{(\nu+1)}$ at most those components that vanished in $\mathbf{x}^{(\nu)}$ can be zero" (page 47); "The proof given here is ingenious and is due to F. Riesz" (page 105). The printing is unpleasant in places, e.g. in (20) on page 24 and (33) on page 43. These minor sores are easy to eliminate and should be eliminated in a second edition.

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