

Book Selection

policy-value algorithm as more efficient for these type of problems. Finally, Chapter 5, the most interesting and shortest chapter in the book, concerns itself with Markov processes in continuous time.

This reviewer found only a very few misprints, one inaccuracy, one dubious statement and could find the need to criticize only one aspect, namely, why could the author not have retained Bellman and Howard's notation, it could have made life so much easier in cross referencing to their work and not least to books on stochastic process theory.

These latter comments are trivial, the price sings sweet and low—the OR man should purchase this book.

W. D. RAY

Nonserial Dynamic Programming.

U. BERTELE and F. BRIOSCHI.

Academic Press, New York, 1972. 235 pp. \$13.95.

Conventional dynamic programming is concerned with the solution of optimization problems which can be formulated as a sequence of decisions. In the discrete deterministic case the essential problem is that of finding the shortest path through a network whose adjacency matrix is triangular. The problem is solved by the well-documented value iteration algorithm.

In more general networks other algorithms than dynamic programming are normally required. In this book, however, Bertele and Brioschi develop the idea of non-serial dynamic programming which is applicable to networks of a general type. In effect, the state space is extended systematically until the problem again becomes sequential. Naturally, this could make the computation very lengthy but the authors recognize this aspect and they show how the exploitation of structure and sparsity form a secondary optimization problem which they discuss in some detail.

The book, which deals with finite, discrete, deterministic problems, starts by introducing non-serial problems, including nonparametric and constrained varieties. Three procedures are then developed, namely, the elimination of variables one by one, the elimination of variables in blocks and multilevel elimination. The treatment is formal but well motivated and illustrated by examples. There are appendices which summarize relevant sections of graph and set theory and one which examines combinatorial aspects of Gaussian elimination.

The book is well written and maintains interest. Problems of combinatorial optimization are hard to discuss in a consistent and accurate way, but the authors negotiate the difficulties extremely well. Their approach has the merit of giving a general structure to what might otherwise appear to be a loosely connected assortment of problems and algorithms.

N. A. J. HASTINGS