

Book Selection

Edited by RICHARD EGLESE and MIKE PIDD

A. CARRIE: Simulation of Manufacturing Systems	401
A. CHIKAN (Editor): Bibliography of Inventory Literature	402
J. R. QUINLAN (Editor): Applications of Expert Systems	402
A. MAKRO and J. BUXTON: The Craft of Software Engineering	403
T. A. BURLEY and G. O'SULLIVAN: Work Out Operational Research	406

Simulation of Manufacturing Systems

ALLAN CARRIE

Wiley, Chichester, 1988. £29.95

ISBN 0 471 91574 2

Any reader involved in OR and manufacturing over the last 10 years can hardly be unaware that the simulation of manufacturing systems is almost routine. This has happened because the designers of both manufacturing systems and simulation software have taken advantage of developments in computer hardware and software.

In the case of manufacturing systems, these commonly involve the linking together of separate processes under direct computer control. The resulting systems are intended to be flexible enough to cope with ranges of products by simple reprogramming. If these flexible manufacturing systems can be made to work properly, then the theory is that work in progress should be reduced almost to zero by the implementation of just-in-time approaches in preference to just-in-case batch techniques.

In the case of simulation, packages are relatively cheap and easy to use on low-priced hardware. The introduction of generic models has further increased the attractions of simulation, especially for engineers who may not wish to become simulation experts.

Carrie's book attempts to bring these two themes together between one set of covers. It is not the first attempt to do so; Hurrion,¹ for example, edited a set of case studies of successful applications, and there have been several conferences devoted to this theme. This book is best seen as having two parts: the first an exposition of discrete simulation, and the second a demonstration of how to simulate certain types of manufacturing systems. In both cases, the style and level are clearly aimed at an engineering audience rather than at management scientists.

The exposition of simulation sensibly supports the three-phase approach for modelling, and gives sufficient examples. The treatment of sampling and experimentation is a little sparse, and is characteristic of accounts aimed at engineers, who often have a sketchy education in statistics. The chapter on available software is as up-to-date as is possible, given publication delays. Most of the examples are based around the use of CAPS/ECSL, with a nod in the direction of MAST, though the chapter on available software gives some space to other packages.

The second part describes the main features of what have come to be termed flexible manufacturing systems (FMS)—a misnomer, I feel. Perhaps a better term would be flexible metal-forming systems; after all, there are types of manufacturing other than those involving discrete metal components. Carrie's description is clear and thorough, and goes on to show, in some detail, how these systems can be simulated.

I found the book clearly written and easy to follow, with a reasonable sequence of examples. To whom should it be recommended? Engineers who wish to find out about simulation will find it useful, but their teachers would be advised to offer more support in the statistical aspects of simulation. Management scientists who are already conversant with discrete simulation will find it gives them a useful view of FMS simulation.

M. PIDD

Reference

1. R. H. HURRION (Ed.) (1986) *Simulation: Applications in Manufacturing*. IFS (Publications).