TOTAL QUALITY MANAGEMENT 3 edited by J.S. Oakland
IFS Publications, Bedford, UK, June 1990. 168 pages (Vol. 1), 64 pages (Vol. 2), no index (£49.00).

Two volumes make up the formal Proceedings of the 3rd International Conference of Total Quality Management which was held on June 5th and 6th in London, U.K.

The first volume is divided into six sections: Keynote paper, People orientated issues, How to introduce TQM in service environments, How to introduce TQM in a manufacturing environment, Best practice TQM, and Late paper. The second volume is a supplement of four late papers.

With two exceptions, all of the authors are from companies based in the U.K., thus these proceeding are a mirror of what is happening within the U.K. Therefore, unlike many other proceedings, there is no need for the reader to have to take into account 'foreign' nationalistic oddities before extracting and implementing ideas from these proceedings.

The papers included within these Proceedings show that the implementation of Total Quality Management has proven to be a benefit to a wide range of U.K. companies. This being so, the purchase of these proceedings by other U.K. companies could improve their own profitability either by direct implementation of procedures from the papers, or through them acting as a catalyst for new ideas.

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INTRODUCTION TO ROBOTICS by Phillip John McKerrow
Addison-Wesley Publishing Company, Wokingham, UK, 1991, 811 pages incl. index (£22.95).

When I picked up and glanced through this book I thought, well that's a £70 book by the looks of it. Much to my surprise the value is there but the cost is a fraction of its apparent value.

Rather than an Introduction to Robotics, I would call this The Compleat Robotica in that it discusses clearly, simply and at length all aspects of robotics. This substantial handbook even includes detailed instruction/refreshment of the basic laws of statics, materials, and dynamics together with clear explanation of the various mathematics used within the discipline.

With end-of-chapter exercises, extensive appendix and bibliography this is indeed The Book for all involved within robots no matter whether they are high-school students, manufacturing directors or academics.

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NEURAL NETWORKS FOR CONTROL edited by W. Thomas Miller III, Richard S. Sutton, and Paul J. Werbos
The MIT Press, Cambridge, Mass., 1990, 524 pages incl. index (£40.50).

This book is based upon a workshop held at the University of New Hampshire in October 1988 entitled: “The application of neural networks to robotics and control.”

The book is divided into three sections: General principles, Motion control, and, Application domains. The first section with 8 chapters and 189 pages addresses general issues in neural networks for control that are independent of application domains. These include recurrent networks, reinforcement learning, and relationships with conventional and adaptive control theory.

The second section contains around 160 pages and is split into 6 chapters. The subject discussed of this section is the class of control problems the most frequently studied in learning control research; namely: neural network learning with regards to motion planning and control in robotics.

The third section has five chapters and within its 110 pages examines a number of application domains well suited to the capabilities of neural-network controllers. These are: Process control, Manufacturing, Flight control and Autonomous vehicles. The appendix presents complete descriptions of seven benchmark control problems namely: The bioreactor, Aircraft autolander, Pole balancing, Tractor-trailer truck steering, Ship steering, Manipulator dynamics, and, Problems from the ACC showcase of adaptive controller design.

Each part of each section and appendix is well endowed with bibliography.

Whilst not for the casual reader, this volume would be of interest to those working in this field.

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ROBOT KINEMATICS: SYMBOLIC AUTOMATION AND NUMERICAL SYNTHESIS by C. Y. Ho and Jen Sriwattanathamma
Ablex Publishing Corp, Lawrence Erlbaum Associates, London, 1990, 314 pages incl. index (£37.75).

This volume is part of Ablex's Computer Engineering and Computer Science Series.

The book has seven chapters: Introduction, Literature review, Direct manipulator kinematics, Differential motions, Symbolically automated direct kinematics and Jacobian equations solver, Inverse manipulator kinematics, and, Results and conclusions. These chapters are followed by two pages of references and three appendices, an author index and finally a subject index.

The origin to the whole work was the suggestion that a computer technique could be developed that would overcome the onerous manual procedure of solving robot kinematics problems. This volume is therefore an up-to-date statement of robot kinematics based upon symbolic automation and numerical synthesis approaches. This has been achieved by visualising robot kinematics mechanisms, formulating suitable mathematical models for evaluating the behaviour of industrial manipulators, and deriving efficient algorithms for obtaining the solutions.

Of particular interest to industry is the fact that this work concentrates upon 'real robots', in that the robots evaluated include models from: NIKO, Jumbo, Skilam, GMF, Hitachi and Unimation. As with any work of this type, the contents of the book are entirely mathematically, without consideration to easy reading. However, for the cognoscente, it is an essential purchase, especially when one considers the contents of the second and third appendices, namely: a 30 page long Program Listing for the Symbolically Automated System; and, an even longer Program Listing for the Arm-Wrist Partitioned Synthesis Algorithm.

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