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CONTRIBUTORS

Agha Iqbal Ali is an associate professor in the School of Management at the University of Massachusetts at Amherst. **Rema Padman** is an assistant professor in the Curtis L. Carlson School of Management at the University of Minnesota, and **Hemalatha Thiagarajan** is an assistant professor at Regional Engineering College, Tiruchi, India. Their paper began when Drs. Padman and Thiagarajan were graduate students at the University of Texas at Austin in a class on the computational aspects of mathematical programming taught by Professor Ali. The data structures and algorithmic mechanisms required to execute dual simplex pivots on a graph efficiently were a natural outgrowth of the synthesis of constructs and computational considerations from graph theory, algorithm design and mathematical programming on which the class focused. The authors continue to do research in algorithm development and implementation technology: Professors Ali and Thiagarajan have used the dual procedures as constructs to aid in the solution of set partitioning problems; Professor Padman has applied the work in Resource Constrained Project Scheduling.

Uttarayan Bagchi's current research interests at the University of Texas at Austin, where he is an associate professor of management, are multicriterion scheduling and the sensitivity analysis of schedules. The idea for this paper came from a consideration of the tradeoff that many production systems face: the tradeoff between doing things right and doing the right thing.

Morris A. Cohen's research interests include manufacturing strategy and supply chain material management. He is the Sloan Visiting Professor at the Graduate School of Business, Stanford University, and Professor of Decision Sciences at the Wharton School, University of Pennsylvania. **Paul R. Kleindorfer** is the Universal Furniture Professor of Decision Sciences and Economics at the Wharton School, where he is currently working on the economics of flexibility and its relationship to technology and operations strategy. **Hau L. Lee**'s research interests include supply chain material management and quality control. He is Associate Professor of Industrial Engineering and Engineering Management at Stanford University. The current research effort is the outgrowth of a project to develop an inventory control system for multiechelon spare parts distribution. An improved control system, based on this theory, has been implemented by a major computer manufacturer. Related papers are "Optimal Stocking Policies for Low Usage Items in Multi-Echelon Inventory Systems (*Naval Res. Logist. Quart.* **33,** 17–38) and "Service Constrained (*s, S*) Inventory Systems with Priority Demand Classes and Lost Sales" (*Mgmt. Sci.* **34,** 482–499).

Arthur M. Geoffrion is a professor of management science in the Anderson Graduate School of Management at the University of California, Los Angeles. His paper is part of a series aimed at establishing the basis for broad spectrum computer-based modeling environments, something that he believes is essential to the future progress of MS/OR. This research grew unexpectedly out of work on a unified theory of model aggregation early in this decade, which, in turn, grew out of large-scale mathematical programming applications to problems in distribution and production. Structured modeling has acquired an active research group at UCLA that now includes three doctoral candidates who are adapting various computer science technologies to key implementation issues. Another half dozen or so faculty at as many institutions also are working on the structured modeling approach to modeling environments.

Peter W. Glynn is an associate professor in the Department of Operations Research at Stanford University. **Ward Whitt** is a member of the technical staff in the Mathematical Sciences Research Center at AT&T Bell Laboratories, Murray Hill, New Jersey. The authors are academic brothers because they both wrote their dissertations with Donald Iglehart. This collaboration started from a discussion at a conference, and represents a shared interest in obtaining useful insights for applications through probability limit theorems.

Winfried Grassmann is a professor of computational science at the University of Saskatchewan. Before going to Canada, he was an operations research analyst for Swissair, the Swiss flag carrier. The projects he worked on involved a substantial amount of queueing theory. Unfortunately, the literature in this area was rather theoretical, and there was a lack of numerical methods which hampered practical applications. Dr. Grassmann investigated numerical methods for solving queueing problems, an effort that led to a number of papers which have been published in leading OR

journals. The methods he pioneered eventually allowed him to find efficient numerical solutions for the GI/G/1 queue. In the present work, Dr. Grassmann was joined by **Joti Jain,** a professor of operations research at the University of Delhi. Dr. Jain has a longstanding interest in the GI/G/1 queue, and he recently published a paper about its departure process ("Numerical Solutions for the Departure Process from the GI/G/1 Queue," *Comp. Opns. Res.* **15**).

Marvin Hersh is an associate professor at the Business School at Emory University. **Shaul P. Ladany** is a professor in the Department of Industrial and Systems Engineering at Ben-Gurion University, Beersheva, Israel. This paper represents a revision and extension of a model developed by Ladany in 1975 for determining the optimal starting height for a competitor in a pole-vaulting competition. The work was motivated by certain changes made in the rules governing pole-vaulting competition, and now provides for determining the heights of vault attempts at all stages of the competition. The optimal policy structure is developed as a dynamic programming model using empirical performance data.

Joti Jain, see **Winfried Grassmann.**

Thomas Kämpke received his diploma and doctoral degree, both in mathematics, from the Technical University, Aachen, West Germany. His interests include the development of mathematical models. This paper originated from his dissertation on stochastic scheduling. He is currently working at Forschungsinstitut für Anwendungsorientierk Wissensverarbeitung (FAW), an institute affiliated with the University of Ulm, where he is involved in the development of an environmental information system, particularly the modeling aspects.

Julian Keilson is a member of the faculty of the Sloan School of Management at MIT, a Senior Staff Scientist at GTE Laboratories, Waltham, and Professor Emeritus at the University of Rochester. He was at the William E. Simon Graduate School of Business Administration at the University of Rochester while much of this work was conducted. He is past president of the Applied Probability College of ORSA/TIMS. **Leslie D. Servi** is a principal member of the technical staff of the Network Performance Analysis Department at GTE Laboratories and a past officer of the Telecommunication Special Interest Group of ORSA. Their article arose from the need to understand the blocking probabilities of processor schedules in telecommunication switches. A related paper by Dr. Servi is "D/G/1 Queues with Vacations" (*Opns. Res.* **34,** 619–629), and by both authors, "Oscillating Random Walk Models for GI/G/1 Vacation Systems with Bernoulli Schedules" (*J. Appl. Prob.* **23,** 790–802) and "Dynamics of an M/G/1 Vacation Model (*Opns. Res.* **35,** 575–582).

Paul R. Kleindorfer, see **Morris A. Cohen.**

Vidyadhar G. Kulkarni's main research interests are stochastic models of queues, reliability systems, computer performance, and communication networks. He is an associate professor of operations research at the University of North Carolina. Multivariate phase type distributions occur naturally in Markovian models. This paper is a result of the author's desire to generalize Assaf et al.'s earlier work on such distributions to make the new class more applicable.

Shaul P. Ladany, see **Marvin Hersh.**

Hau L. Lee, see **Morris A. Cohen.**

Rema Padman, see **Agha Iqbal Ali.**

Warren Powell is an associate professor in the Department of Civil Engineering and Operations Research at Princeton University. His research focuses on mathematical models within the motor carrier industry, including network design, dynamic fleet management and pricing. **Yosef Sheffi** is a professor in the Department of Civil Engineering and head of the Transportation Systems Division at MIT, which has a research focus in motor carriers and shipper logistics. Their article derives from an implementation of a tactical and strategic planning system at PIE Nationwide that spanned a 3-year developmental effort. The project began with a determination to implement a planning system, using the techniques of operations research, that a motor carrier would use on an ongoing basis. The article summarizes the insights learned from this project, covering algorithms and modeling, as well as the range of design issues that were encountered in order to make the system usable.

Reuven Rubinstein is affiliated with the Faculty of Industrial Engineering and Management at the Technion-Israel Institute of Technology as Head of the Operations Research and Information Systems area. His paper answers some important practical and theoretical questions on how to evaluate performance, to derive sensitivities (gradients and Hessians) and to optimize complex discrete event systems (DES) from a single sample path (simulation experiment) of a computer simulation and real-world system. This paper is part of ongoing research on sensitivity analysis

and the optimization of complex DES, such as flexible manufacturing systems, computer-communication networks, and PERT-project networks.

Leslie D. Servi, see **Julian Keilson**.

Yosef Sheffi, see **Warren B. Powell**.

David W. Sullivan is a research engineer at Lockheed Missiles and Space Co., Austin Division. This paper evolved from his Master's degree thesis research at the University of Texas at Austin in the operations research area of the Mechanical Engineering Department. His current work involves the development and testing of signal analysis systems in a considerably more restrictive setting.

Hemalatha Thiagarajan, see **Agha Iqbal Ali**.

Ward Whitt, see **Peter W. Glynn**.

James R. Wilson is an associate professor of industrial engineering at Purdue University. His current research interests focus on the design and analysis of simulation experiments, including multivariate input modeling, multivariate output analysis, variance reduction techniques, and ranking and selection procedures.