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## NOTES ABOUT AUTHORS

**Hamilton Emmons** ("A Replenishment Model for Radioactive Nuclide Generators") is Assistant Professor in the Department of Operations Research at Cornell University. He received the degrees A.B. at Harvard College in mathematics (1952), M.S. in applied mathematics at the University of Minnesota (1958), M.S. in electrical engineering at New York University (1962), and expects to receive the Ph.D. in operations research from The Johns Hopkins University in 1968. His most recent research was concerned with completing his dissertation of which this article is a part. His dissertation is concerned with the selection and economic utilization of radioactive substances in medical diagnosis. This includes such medical considerations as radiation dosage to the patient as well as the purely economic factors exemplified in the paper. Professor Emmons is coauthor of an article with Henry N. Wagner, Jr., on radioactive pharmaceuticals. His previous work experience has included six years on the staff of the Bell Telephone Laboratories in a systems engineering center. Professor Emmons was born in London, England.

**Koichi Miyasawa** ("Information Structures in Stochastic Programming") is a Professor of Statistics in the Department of Economics of the University of Tokyo. He received the M.S. degree in 1941 from the Tokyo University of Education and the Ph.D. degree in 1952 from Kyushu University. He says, "I have long been interested in decision theory in general. I was very happy to study game theory in the Econometric Research Program, Princeton University, in 1960 and 1961 under the direction of Professor Oskar Morganstern. Since I came back to Tokyo, I have been mainly interested in the Bayesian approach in statistics and in information theory from the decision theoretic viewpoint. My second happy time came in 1965 and 1966 when I worked at the Western Management Science Institute, University of California at Los Angeles, under the direction of Professor Jacob Marschak. Receiving many valuable instructions from him under the stimulating atmosphere of the Institute, I became a captive of that fascinating subject 'Information and Decision'. The original version of the paper was written there at the suggestion of Professor Marschak." Professor Miyasawa is author of articles on both game theory and team decision problems. He was born in Japan.

**Jeremy F. Shapiro** ("Turnpike Planning Horizons for a Markovian Decision Model") is an Assistant Professor of Management at the Sloan School of Management of the Massachusetts Institute of Technology. After spending the school year 1959-60 at the University of Paris, he received the degrees B.M.E. in 1962 and M.I.E. in 1963 from Cornell University, and Ph.D. from Stanford University in 1967. His present research interests include integer and mixed integer programming, Markovian decision theory, multi-stage planning models, and combinatorial optimization problems. He is co-author of an article in *Operations Research* entitled, "A Finite Renewal Algorithm for the Knapsack and Turnpike

Models." Professor Shapiro says, "The idea for this paper grew out of the research done by Harvey Wagner and myself on the knapsack problem. That problem can be viewed as a one state deterministic model, but some of the insightful results we obtained for it were extensible to the multi-stage probabilistic Markovian decision model." Although he was born in Durham, North Carolina, Professor Shapiro considers himself a native of New York City.

**Harvey M. Wagner** ("Algorithmic Equivalence in Linear Fractional Programming") is a Professor in the Department of Administrative Sciences at Yale University. He was previously Professor in the Graduate School of Business at Stanford University. Having received the B.S. (1953) and M.S. (1954) degrees in statistics from Stanford University, he was awarded the Ph.D. degree (1960) in economics from the Massachusetts Institute of Technology. Professor Wagner's research and teaching interests span several areas of management science, including linear, nonlinear, and dynamic programming, as well as inventory theory. He is currently exploring the use of time-shared computer facilities in the solution of dynamic control processes. He is also completing an introductory text in operations research which will be published by Prentice Hall within a year. Professor Wagner has published two books and over fifty articles in *Management Science*, *Operations Research*, *Naval Research Logistics Quarterly*, *Econometrica*, *Harvard Business Review*, and several other journals. He says that this article grew out of a question written for the 1966 Doctoral Qualifying Examination in the Operations Research Program at Stanford University. Professor Wagner was born in San Francisco.

**John S. C. Yuan** ("Algorithmic Equivalence in Linear Fractional Programming") is with the Management Science Services Dept., I.B.M. Corporation, in Armonk, New York. He received the degrees B.S. and M.S. in electrical engineering from the Massachusetts Institute of Technology (1963) and expects to receive the Ph.D. degree in operations research from Stanford University in 1968. He is presently engaged in research on a model of production scheduling and employment smoothing. Dr. Yuan is interested in inventory theory, mathematical programming, and models for capital budgeting and long range planning. He was born in Peking, China.

**Mordecai Avriel** ("Golden Block Search for the Maximum of Unimodal Functions") is a Research Chemical Engineer with the Mobil Research and Development Corporation. He received the degrees B.Sc. (1961) and M.Sc. (1963) from Technion-Israel Institute of Technology in chemical engineering, and Ph.D., also in chemical engineering, from Stanford University (1966). Dr. Avriel is currently interested in linear and nonlinear programming, mathematical economics, and optimal engineering design. He has published articles in *Management Science*, *ORSA Journal*, and *Industrial and Engineering Chemistry*. He says, "I came across the problems discussed in this paper and a previous one published in *Management Science* in the most natural way—by accident. I started working on optimal search strategies with time delays, but 'just for curiosity' I looked into the problem of block search and was fascinated to learn that an extension of the

Fibonacci series and the ancient Golden Section plays a central role in the optimal policies. Needless to say, I have never solved the time delay problem." Dr. Avriel was born in Budapest, Hungary.

**Douglass J. Wilde** ("Golden Block Search for the Maximum of Unimodal Functions") is a Professor of Chemical Engineering at Stanford University. Professor Wilde was awarded the degrees B.S. (1948) from the Carnegie Institute of Technology, M.S. (1956) from the University of Washington, and Ph.D. (1960) from the University of California at Berkeley, all in chemical engineering. His current research interests include optimization theory, partial control, generalized polynomial optimization, and direct optimization. He is author of two books (one co-authored with C. S. Beightler), and of thirty technical articles on optimization and control. Professor Wilde has also had five years experience in the chemical and petroleum industry and two years in the U.S. Navy. He was born in Chicago, Illinois.

**John C. Harsanyi** ("Games with Incomplete Information Played by 'Bayesian' Players, Part II. The Basic Probability Distribution of the Game") is Professor of Business Administration and Economics at the University of California at Berkeley. His major research interest is in mathematical economics and in game theory, and more generally in the use of analytical models in the social sciences. He was awarded the Dr. Phil. degree from the University of Budapest, the M.A. degree from the University of Sydney, Australia, and the Ph.D. degree from Stanford University. He writes, "My present paper has greatly benefited from personal discussions with the participants of the International Game Theory Workshop organized by Professors Robert J. Aumann and Michael Maschler, and held at the Hebrew University in Jerusalem in October–November 1965. Part of my work on this paper was done in the very attractive and stimulating environment provided by the Center for Advanced Study in the Behavioral Sciences, Stanford, during my fellowship year, 1965–66."

**Peter C. Fishburn** ("Utility Theory") is a member of the Advanced Research Department of the Research Analysis Corporation in McLean, Virginia. He received the degrees B.S. in industrial engineering at Penn State in 1958, M.S. and Ph.D., 1961 and 1962 respectively, in operations research at Case Institute of Technology. Dr. Fishburn is presently writing a book on utility theory for decision making, which consists of four parts: I. Nonrisky Utility Theory, II. Expected Utility Theory, III. States of the World Theories, and IV. Utility Theory for Group Decisions. He has written one book, *Decision and Value Theory* (Wiley, 1964) and articles in *Management Science*, *Operations Research*, *Mathematical Psychology*, *Econometrica*, and other journals. Dr. Fishburn says that preparation of his survey on utility theory has been an interesting and valuable experience. He says further, "I apologize for the omission of references which could, and perhaps should, have been included, and welcome all suggestions that will help in compiling a more complete bibliography. I thank a number of friends who have called to my attention many of the references cited in the survey." Dr. Fishburn was born in Philipsburg, Pennsylvania.