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PREFACE

The object of this book is to explain some of the ideas in modern system theory and to show how they can be applied to certain problems in management science. Growth is viewed as dynamics, planning is viewed as trajectory estimation, and control as trajectory maintenance. The basic assumptions are that the future is not there to be discovered but must be created, that possibility is an efficient uncertainty variable, and that a global approach is preferable to a local one.

In any text the author's most important contribution is the emphasis he decides to place on particular topics. I hope that the contribution of this book is highlighted by the recognition of fuzziness in management, and the discussion of abrupt changes in behaviour. The message is that system theory can guide us in deriving far-reaching conclusions from clearly stated premises. Imaginative contrivance distinguishes human action from animal behaviour. Invention and creation of models is proper to conscious praxis of human beings. The manager raises his structure in imagination before he erects it in reality. At the end he gets a result that already exists ideally in the imagination. A model is partial, it never represents the entire reality. Since we do not know what has been omitted we must make assumptions in model formulation. A key point in this book is that fuzziness is not a liability. On the contrary, it makes for robustness.

Industrial and economic systems are much more complicated than usual systems of physics. Borrowing the language of control engineering is one thing and applying its methods to management policies is another. In my approach to the subject no effort has been made to survey all the methods that make up the burgeoning body of modern mathematical system theory. Those examined were chosen for their importance in applications.

This book is a revision of the lecture notes for an introductory course in system theory given between 1971—1976 at the Faculty of Economic Cybernetics in Bucharest. I want to thank Prof. M. Mănescu for inviting me to deliver this course, to Dr. Șt. Birlea, Prof. A. Halanay, and Prof. E. Nicolau for their continual help and encouragement.

The book is consistently characterized by the experience of the author as head of research laboratory at the Institute of Management and Informatics, and owes much of its present form to the comments and contributions of the participants in seminars, whom the author very much wishes to thank.

Bucharest, May, 1978

C. V. NEGOIȚĂ

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