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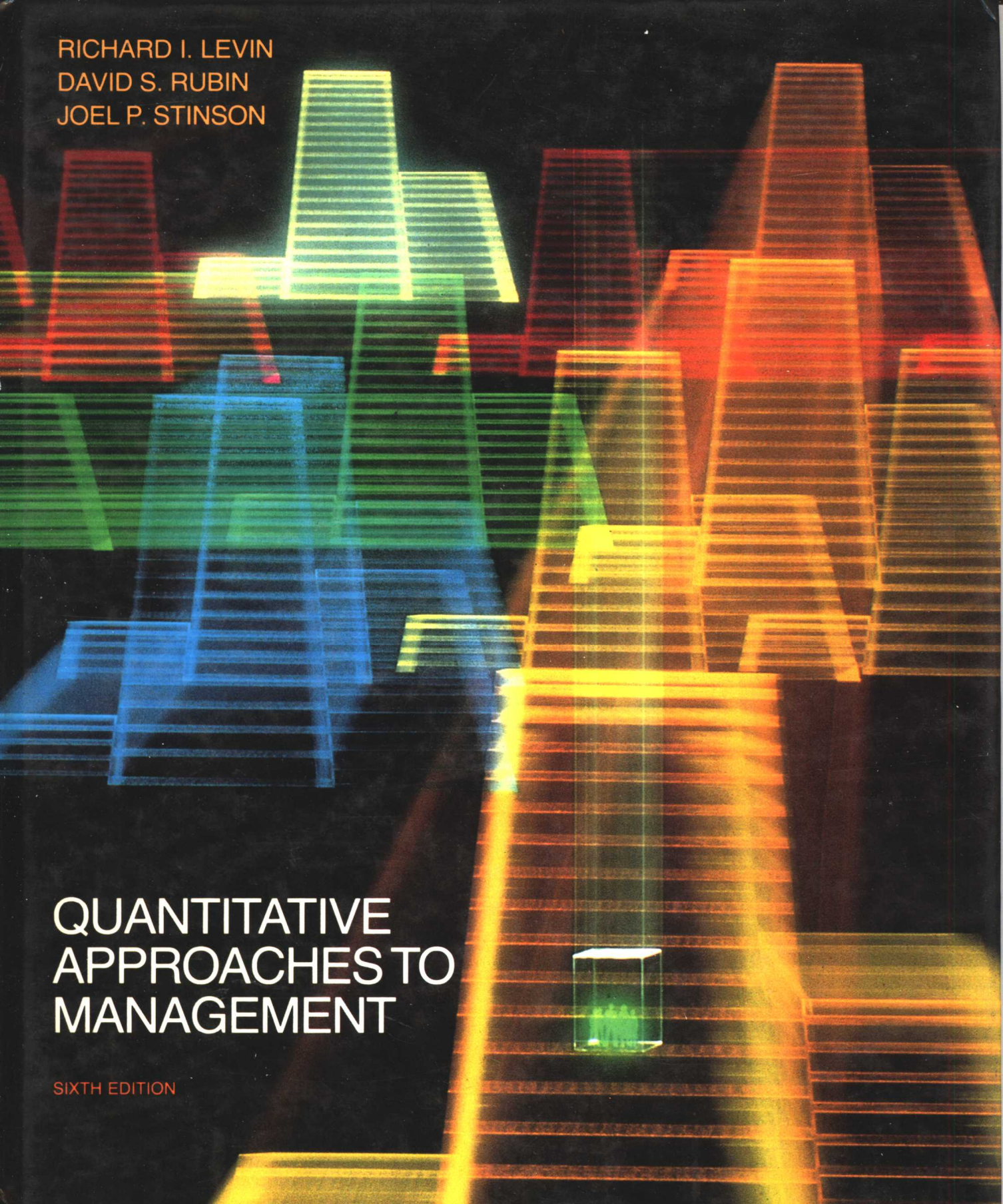

QUANTITATIVE APPROACHES TO MANAGEMENT

SIXTH EDITION

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QUANTITATIVE
APPROACHES TO
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PREFACE

This is the sixth edition of a book which first appeared twenty years ago. Research, teaching, and application of management science/operations research have undergone many changes in that interval, but the strategy of our book is still to make it possible for persons with a modest background in math to understand this field and gain an understanding of how it is applied to our lives. This was the first textbook in the field focused on non-mathematicians, and we still believe you deserve a chance to study this exciting discipline in a straightforward understandable manner.

Those of you who are familiar with the earlier editions will notice several significant changes; a few words about each of them:

A FAMILIAR NAME MISSING

Charles A. Kirkpatrick, or "Kirk" as we called him, passed away during 1985. As one of the original authors of this book his imprint is a heavy one, and each of us owes him a great deal. Whatever modest success we have achieved is because he taught us well. He was our friend and our colleague, and we miss him.

A NEW COAUTHOR

Joel Stinson joins us in this edition. Professor Stinson has taught management science/operations research courses at Syracuse University for a number of years and has published in this field.

NEW APPROACHES IN THE TEXT

There are a dozen new features in this edition:

- We have added a section on *Bayesian analysis for decision trees.*

- There is a comprehensive new section on *heuristics*.
- The *exercises and end-of-chapter quizzes* have been revised.
- There is a completely revised chapter on *forecasting*.
- We've added a section on *interesting uses of game theory*.
- You will find *applied microcomputer exercises* in the chapters on Forecasting, Decision Making Using Probabilities I, Decision Making Using Probabilities II, Networks I, Networks II, and Waiting Lines.
- There is a new section on the *exponential distribution*.
- The chapter on *queuing* has been completely revised.
- The material on transportation method, assignment method, PERT/CPM, PERT/Cost, network scheduling, flow, spanning tree and shortest route algorithms, and dynamic programming has been completely reorganized into two chapters on *networking*.
- There is a new section on the *relationship between management information systems and MS/OR*.
- Our chapter on *management science—yesterday, today, and tomorrow* has been completely revised, and
- We've added a section on microcomputers and MS/OR.

ACKNOWLEDGMENTS

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Richard I. Levin
David S. Rubin
Joel P. Stinson

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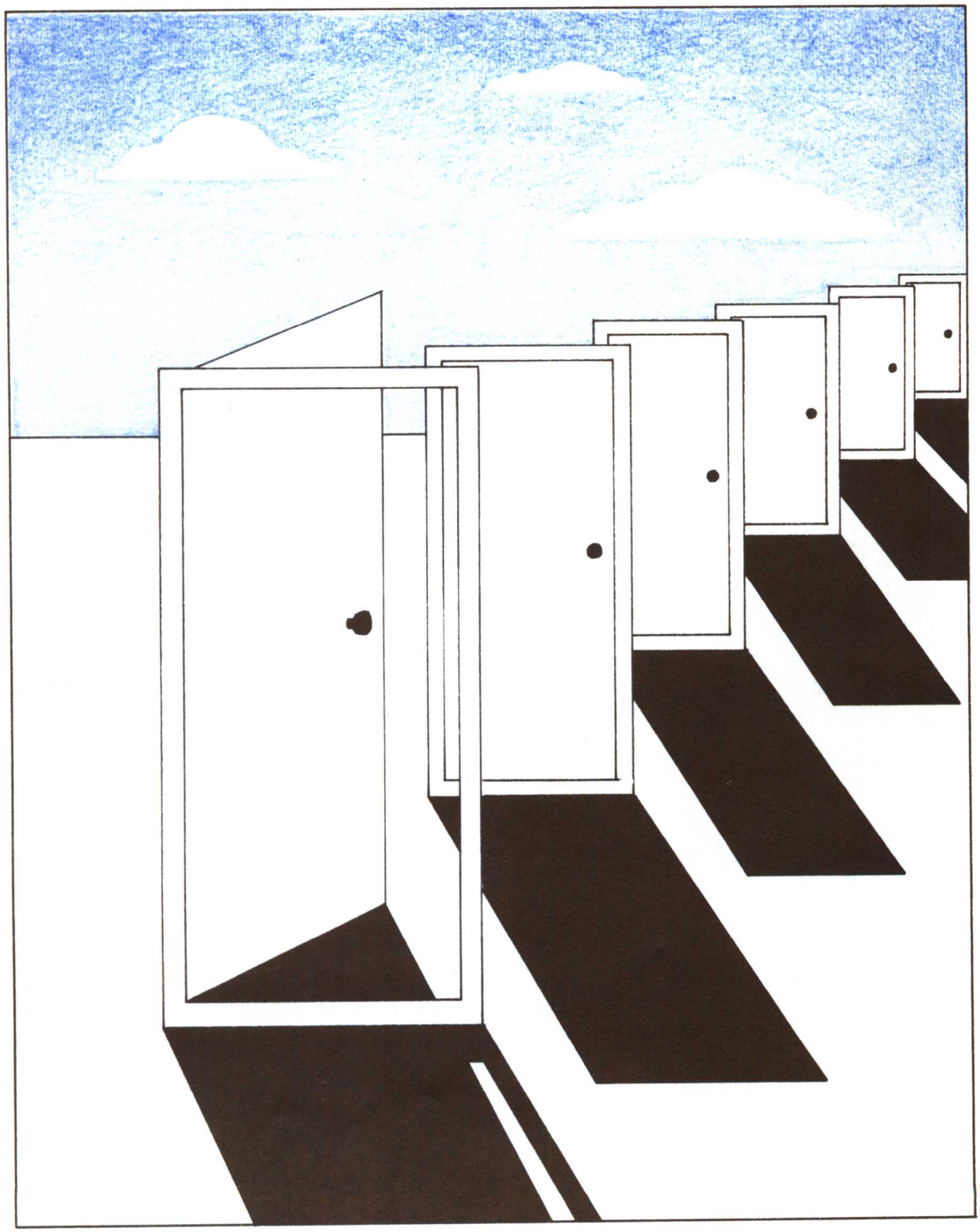

1 INTRODUCTION

Quantitative Methods and Their Supporting Information Systems

1. Management science/operations research: the quantitative approach to management decision making 5
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CHAPTER OBJECTIVES

- Introduce the philosophy of the book.
- Review the discipline of management science/operations research and the steps in the process.
- Provide a short history of the discipline of management science/operations research.

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