Contents

Preface	v
On the Effectiveness and Limits of Mathematics in Physics A. O. Barut	1
Why is the Universe Knowable? P. C. W. Davies	. 14
Mathematics in Sociology: Cinderella's Carriage or Pumpkin? Patrick Doreian	34
Fundamental Roles of Mathematics in Science Donald Greenspan	55
Inner Vision, Outer Truth Reuben Hersh	64
Mathematics and the Natural Order Wendell G. Holladay	73
A Few Systems-Colored Views of the World Yi Lin	94
The Reasonable Effectiveness of Mathematical Reasoning Saunders Mac Lane	115

Three Aspects of the Effectiveness of Mathematics in Science Louis Narens and R. Duncan Luce	122
Mathematics and Natural Philosophy Robert L. Oldershaw	136
Mathematics and the Language of Nature F. David Peat	154
The Reason Within and the Reason Without John Polkinghorne	173
The Modelling Relation and Natural Law Robert Rosen	183
Structure and Effectiveness La Verne Shelton	200
Psychology and Mathematics James T. Townsend and Helena Kadlec	223
Ariadne's Thread: The Role of Mathematics in Physics Hans C. von Baeyer	249
The Disproportionate Response Bruce J. West	258
The Unreasonable Effectiveness of Mathematics in the Natural Sciences Eugene P. Wigner (reprint)	291
The Effectiveness of Mathematics in Fundamental Physics A. Zee	307
Bibliography	325
Subject Index	329