

CONTENTS

Foreword by Wolfgang Hofkirchner and David Rousseau	<i>xi</i>
Preface to the Revised Edition	<i>xxiii</i>
Preface to the First Edition	<i>xxxi</i>
Acknowledgements	<i>xxxv</i>
1 Introduction	3
Systems Everywhere	3
On the History of Systems Theory	10
Trends in Systems Theory	17
2 The Meaning of General System Theory	30
The Quest for a General System Theory	30
Aims of General System Theory	36
Closed and Open Systems: Limitations of Conventional Physics	39
Information and Entropy	41
Causality and Teleology	44
What Is Organization?	46
General System Theory and the Unity of Science	48
General System Theory in Education: The Production of Scientific Generalists	49
Science and Society	51
Ultimate Precept: Man as the Individual	52
3 Some System Concepts in Elementary Mathematical Consideration	54
The System Concept	54
Growth	60
Competition	63
Wholeness, Sum, Mechanization, Centralization	66
Finality	75
Types of Finality	77
Isomorphism in Science	80
The Unity of Science	86

4	Advances in General System Theory	87
	Approaches and Aims in Systems Science	87
	Methods in General Systems Research	94
	Advances of General System Theory	99
5	The Organism Considered as Physical System	120
	The Organism as Open System	120
	General Characteristics of Open Chemical Systems	124
	Equifinality	131
	Biological Applications	134
6	The Model of Open System	139
	The Living Machine and Its Limitations	139
	Some Characteristics of Open Systems	141
	Open Systems in Biology	145
	Open Systems and Cybernetics	149
	Unsolved Problems	151
	Conclusion	153
7	Some Aspects of System Theory in Biology	155
	Open Systems and Steady States	156
	Feedback and Homeostasis	160
	Allometry and the Surface Rule	163
	Theory of Animal Growth	171
	Summary	184
8	The System Concept in the Sciences of Man	186
	The Organismic Revolution	186
	The Image of Man in Contemporary Thought	188
	System-Theoretical Re-orientation	192
	Systems in the Social Sciences	194
	A System-Theoretical Concept of History	197
	The Future in System-Theoretical Aspect	203
9	General System Theory in Psychology and Psychiatry	205
	The Quandary of Modern Psychology	205
	System Concepts in Psychopathology	208
	Conclusion	220

10 The Relativity of Categories	222
The Whorfian Hypothesis	222
The Biological Relativity of Categories	227
The Cultural Relativity of Categories	232
The Perspectivistic View	239
Notes	248
Appendix I: Notes on Developments in Mathematical System Theory	251
Appendix II: The Meaning and Unity of Science	257
References	260
Suggestions for Further Reading	281
Index	285