

# Contents

<b>Chapter 1</b>	<b>The Problem</b> .....	<b>1</b>
	The Complexity of the World .....	1
	Mechanism and Mechanics .....	3
	The Square Law of Computation .....	6
	The Simplification of Science and the Science of Simplification .....	8
	Statistical Mechanics and the Law of Large Numbers .....	12
	The Law of Medium Numbers .....	19
	Questions for Further Research .....	23
	Readings .....	26
<b>Chapter 2</b>	<b>The Approach</b> .....	<b>27</b>
	Organism, Analogy, and Vitalism .....	27
	The Scientist and His Categories .....	31
	The Main Article of General Systems Faith ....	35
	The Nature of General Systems Laws .....	38
	Varieties of Systems Thinking .....	43
	Questions for Further Research .....	47
	Readings .....	49
<b>Chapter 3</b>	<b>System and Illusion</b> .....	<b>51</b>
	A System Is a Way of Looking at the World ...	51
	Absolute and Relative Thinking .....	56
	A System Is a Set .....	62
	Observers and Observations .....	67

	The Principle of Indifference .....	72
	Questions for Further Research .....	80
	Readings .....	83
	Notational Exercises .....	84
	Answers to Notational Exercises .....	84
<b>Chapter 4</b>	<b>Interpreting Observations .....</b>	<b>87</b>
	States .....	87
	The Eye-Brain Law .....	94
	The Generalized Thermodynamic Law .....	98
	Functional Notation and Reductionist Thought .....	105
	Incompleteness and Overcompleteness .....	110
	The Generalized Law of Complementarity .....	116
	Questions for Further Research .....	122
	Readings .....	125
	Notational Exercises .....	126
	Answers to Notational Exercises .....	127
<b>Chapter 5</b>	<b>Breaking Down Observations .....</b>	<b>131</b>
	The Metaphors of Science .....	140
	Boundaries and Things .....	144
	Qualities and the Principle of Invariance .....	150
	Partitions .....	155
	The Strong Connection Law .....	158
	Questions for Further Research .....	162
	Readings .....	168
	Notational Exercises .....	168
	Answers to Notational Exercises .....	168
<b>Chapter 6</b>	<b>Describing Behavior .....</b>	<b>171</b>
	Simulation—The White Box .....	171
	State Spaces .....	182

Time as a Standard of Behavior .....	193
Behavior in Open Systems .....	203
The Principle of Indeterminability .....	209
Questions for Further Research .....	216
Readings .....	224
Notational Exercises .....	225
Answers to Notational Exercises .....	225
<b>Chapter 7 Some Systems Questions .....</b>	<b>227</b>
The Systems Triumvirate .....	227
Stability .....	229
Survival .....	236
Identity .....	239
Regulation and Adaptation .....	246
The Used Car Law .....	253
Questions for Further Research .....	256
Readings .....	260
<b>Appendix .....</b>	<b>269</b>
<b>Notes .....</b>	<b>261</b>
<b>Author Index .....</b>	<b>271</b>
<b>Subject Index .....</b>	<b>273</b>