
Contents

Volume 1

List of Figures and Tables | xi

Acknowledgments | xiii

Part One: Personal Knowledge

Chapter 1: The Origin of Personal Reality | 3

1.1 Preface · 3

1.2 The Meaning of Evolution and the Theory of Natural Selection · 4

1.3 Personal Reality from Personal Knowledge · 14

1.4 Conclusion · 19

Chapter 2: The Laplacian Ideal of Knowledge | 20

2.1 Preface · 20

2.2 The Knowledge of the Demon according to Laplace · 21

2.3 The Knowledge of the Demon according to Polanyi · 24

2.4 The Physics of the Demon · 30

2.5 Laplacian Faults or Deceptive Substitutions · 37

2.6 Conclusion · 43

Chapter 3: Personal Knowledge | 45

3.1 Preface · 45

3.2 The Tacit Roots of Scientific Discovery · 46

3.3 The Tacit Roots of Personal Knowledge · 54

3.4 The Tacit Roots of Explicit Sentences · 63

3.5 The Tacit Roots of the Critical Method of Doubt · 73

3.6 The Tacit Fundament of Personal Beliefs: Commitment · 83

3.7 Conclusion · 91

Chapter 4: The Meaning of Randomness | 93

- 4.1 Preface · 93
- 4.2 The Concept of Order · 95
- 4.3 The Recognition of Order · 98
- 4.4 The Appraisal of the Deepness of an Order · 109
- 4.5 Randomness as Emergence · 113
- 4.6 Absolute Randomness · 118
- 4.7 Emergence and Evolution: The Origin of Personal Knowledge · 123
- 4.8 Conclusion · 133

Part Two: Emergence

Chapter 5: Emergence | 137

- 5.1 Preface · 137
- 5.2 The Concept and Original Meaning of Emergence · 138
- 5.3 Reduction and Materialism · 147
- 5.4 Reduction as Emergence · 151
- 5.5 The Two Janus Faces of Emergence · 161
- 5.6 Polanyi's Understanding of Emergence · 166
- 5.7 A Short Reductionist Argument against Materialism · 174
- 5.8 The Main Contra-Arguments of Materialism · 178
- 5.9 Conclusion · 184

Chapter 6: Space, Time, and Matter | 187

- 6.1 Preface · 187
- 6.2 Alexander's Concept of Space-Time · 188
- 6.3 Einstein's Theory of Special Relativity · 198
- 6.4 Understanding Special Relativity · 204
- 6.5 Einstein's Theory of General Relativity · 212
- 6.6 Understanding General Relativity · 222
- 6.7 Conclusion · 233

Chapter 7: The Theory of Boundary Conditions | 236

- 7.1 Preface · 236
- 7.2 The Concept of Boundary Conditions · 237
- 7.3 Boundary Conditions from Physics · 241
- 7.4 Boundary Conditions in Physical Sciences · 246

- 7.5 Boundary Conditions in Life Sciences and Engineering · 249
- 7.6 Boundary Conditions in the Light of Philosophy · 258
- 7.7 The Reality of Time · 264
- 7.8 Conclusion · 267

Bibliography | 271

Volume 2

List of Figures and Tables | ix

Part Three: Evolution

Chapter 8: The Logic of Achievement | 3

- 8.1 Preface · 3
- 8.2 Machines and the Rules of Rightness · 5
- 8.3 Living Beings and the Rules of Rightness · 10
- 8.4 The Knowledge of Machines · 16
- 8.5 The Knowledge of Computers · 23
- 8.6 Conclusion · 29

Chapter 9: Evolution | 31

- 9.1 Preface · 31
- 9.2 The Concept of Evolution · 32
- 9.3 The Ordering Principles of Life and Evolution · 41
- 9.4 The General Theory of Evolution · 46
- 9.5 The General Theory of Organization · 59
- 9.6 Knowledge and Biology: Acknowledging the Emergent Reality of Life · 74
- 9.7 Personal Knowledge and Natural Selection · 87
- 9.8 Conclusion · 96

Chapter 10: Cultural Evolution | 98

- 10.1 Preface · 98
- 10.2 The Concept of Cultural Evolution · 100
- 10.3 The Theory of Memes · 107
- 10.4 The Concept of Cultural Transmission · 115

- 10.5 The Origin of Cultural Organization · 120
- 10.6 Individuals, Groups, and Persons · 133
- 10.7 The Emergence of Cultural Organization · 151
- 10.8 Writing as an Information Recording and
Transmitting System · 160
- 10.9 Conclusion · 178

Part Four: Personal Reality

Chapter 11: Scientific and Cultural Reality | 183

- 11.1 Preface · 183
- 11.2 The Concept of Scientific Revolutions · 185
- 11.3 Thomas S. Kuhn and the Evolutionary View of Science · 193
- 11.4 Relativism and Absolutism: David Bloor vs. Pope
Benedict XVI · 214
- 11.5 Scientific Revolutions, Personal Knowledge, and Truth · 233
- 11.6 Personal Reality and Demolished Idols · 250
- 11.7 Conclusion · 266

Chapter 12: Moral and Intellectual Reality | 269

- 12.1 Preface · 269
- 12.2 Modern Dynamic Societies and their Embedded Menace · 270
- 12.3 Moral Inversion and Marxism · 276
- 12.4 The Intellectual (Spurious) Forms of Moral Inversion · 286
- 12.5 The New Forms of Moral Inversion · 297
- 12.6 Conclusion · 303

Chapter 13: The Future of Personal Reality | 305

- 13.1 Preface · 305
- 13.2 Truth and Morality · 305
- 13.3 God and Matter · 307
- 13.4 Evolution and Emergence · 311
- 13.5 Science and Wisdom · 312
- 13.6 Conclusion · 314

Bibliography | 315