## Detailed Contents

Preface and Acknowledgements	XV
List of Figures, Tables, and Boxes	xvii
Introduction	
Part I. Agency in Evolutionary Biology	
1. Agential Thinking and its Rationale	9
1.1 Introduction	9
1.2 Concepts of Agency	12
1.3 Two Types of Agential Thinking	15
1.4 Mother Nature as an Agent	16
1.5 Organisms as Agents	21
1.6 Unity-of-purpose	28
1.7 Agents, Goals, and Interests	34
1.8 Dennett Reconsidered	39
1.9 Conclusion	41
2. Genes and Groups as Agents	43
2.1 Introduction	43
2.2 Genes as Agents	44
2.3 Groups as Agents	51
2.4 Group Agency in Social Science	60
2.5 The Biological Veil-of-ignorance	65
2.6 Conclusion	70
Part II. The 'Goal' of Fitness Maximization	
3. Wright's Adaptive Landscape, Fisher's Fundamental Theorem	73
3.1 Introduction	73
3.2 The Adaptive Landscape	74
3.3 Fisher's Fundamental Theorem	84
3.4 Conclusion	96
Appendix 3.1	97
4. Grafen's Formal Darwinism, Adaptive Dynamics	98
4.1 Introduction	98
4.2 Grafen's 'Maximizing Agent' Analogy	99
4.3 Frequency-dependent Selection	108
4.4 Empirical or Theoretical Justification?	114
4.5 Conclusion	116

## XIV DETAILED CONTENTS

5. Social Evolution, Hamilton's Rule, and Inclusi	ive Fitness 117
5.1 Introduction	117
5.2 Hamilton's Rule and Inclusive Fitness Maximi	zation 118
5.3 The Case of Additive Payoffs	121
5.4 Non-additive Payoffs	127
5.5 Causality and Switching	133
5.6 Conclusion	1/1
Appendix 5.1	141
Part III. Rationality Meets Evolution	
6. The Evolution–Rationality Connection	149
6.1 Introduction	149
6.2 Concepts of Rationality	151
6.3 Rationality as Evolutionary Adaptation	154
6.4 Interlude: Relating the Two Dimensions	159
6.5 Evolution of Bayesian Rationality?	161
6.6 Fitness and Utility	168
6.7 Naturalization of Rationality?	171
6.8 Conclusion	174
7. Can Adaptiveness and Rationality Part Ways	175
7.1 Introduction	175 175
7.1 Introduction  7.2 Cooperation and the Prisoner's Dilemma	176
7.2 Cooperation and the Trisoner's Diffinita 7.3 Fairness and the Ultimatum Game	179
7.3 Tairiness and the Ontiniatum Game 7.4 Trust and the Indirect Evolutionary Approach	eterite interview bell all the
7.4 Trust and the municet Evolutionary Approach 7.5 Intransitive Choices	185
7.5 Hitransitive Choices  7.6 Risk Preference	189
7.0 Risk Frederice 7.7 Inter-temporal Choice	192
	196
7.8 Upshot 7.9 Conclusion	190
7.9 Conclusion	199
8. Risk, Rational Choice, and Evolution	200
8.1 Introduction	200
8.2 Expected Utility and its Discontents	
8.3 Risk in Evolution	205
8.4 'Mother Nature' and Geometric Mean Fitness	
8.5 Evolution of Irrationality?	216
8.6 Bet-hedging and Mixed Strategies	221
8.7 Conclusion	229
Final Thoughts	230
	Authanbeatel La
References	235
10,0,0,000	253
Index	ittenpirient lasitoreen Trougairienti