

Contents

	<i>Preface</i>	page ix
Part I Prevue		1
1	Making the Improbable Probable	3
1.1	Generalised Evolution	3
1.2	Human Evolution Beyond Biology	6
1.3	Practical Values of Evolutionary Reasoning	9
1.4	Resistance to Evolutionary Social Science	13
2	The World According to Evolution	19
2.1	The V-S-I-R Algorithm	19
2.2	Darwin's Legacy in the Social Sciences	24
2.3	Evolutionary Philosophy	27
2.4	Design Versus Evolution	32
Part II Evolutionary Biology		43
3	Pre-Darwinism, Darwinism and Neo-Darwinism	45
3.1	Evolutionary Thinking Until Darwin	45
3.2	The Significance of Darwin	50
3.3	The Rise of Genetics	58
3.4	Central Concepts and Mechanisms of Neo-Darwinism	63
3.5	Nine Types of Evidence	69
3.6	Major Transitions in Natural History Along Three Dimensions	77
4	Advanced Ideas in Evolutionary Biology and Genetics	86
4.1	Beyond Neo-Darwinism	86
4.2	Drift, Epigenetics and Directed Mutations	89
4.3	Modular and Symbiotic Evolution	93
4.4	Varieties of Macroeolution	96
4.5	Early Chemical Evolution and Origin of Life	102
4.6	Ecology, Coevolution and Niche Construction	109

4.7	Sexual Selection and Cultural Effects	117
4.8	Economic Phenomena in Biological Evolution	123
Part III	Bridging Natural and Social Sciences	129
5	Evolution of Social Behaviour in Animals and Humans	131
5.1	Sociobiology	131
5.2	Social Behaviour and Organisation in Animal Species	137
5.3	Evolution of Empathy, Morality and Altruism in Primates	141
5.4	Human Sociobiology and Evolutionary Psychology	143
5.5	Evolution of Human Language	147
6	Group Selection in Biology and the Social Sciences	155
6.1	Forgotten Groups	155
6.2	Defining Group and Multilevel Selection	157
6.3	Lessons from the Debate on Group Selection	159
6.4	Experimental and Empirical Evidence	165
6.5	Mechanisms of Group Selection	169
6.6	Cultural Group Selection	174
6.7	Potential Applications in Social Science	178
Part IV	Evolutionary Social Sciences	181
7	Evolutionary Theories of Human Culture	183
7.1	Nature and Nurture	183
7.2	Evolutionary Thinking in Sociology and Anthropology	187
7.3	Dual Inheritance	194
7.4	Gene–Culture Coevolution	199
7.5	Evolution and Learning	204
7.6	Imitation and the Selfish Meme	209
7.7	Evolutionary Explanations of Religions	217
7.8	Evolving Musical Sense, Styles and Technologies	225
7.9	Evolution of Humour, Jokes and Laughter	232
7.10	A Comparison of Four Approaches to Cultural Evolution	235
8	Evolutionary Economics	239
8.1	A Typology of Evolutionary Economic Thought	239
8.2	Building Blocks	240
8.3	Evolutionary Economics and Biology Compared	243
8.4	A Brief History of Core Contributions	247
8.5	Evolutionary Games and Agent-based Models	259
8.6	Evolutionary Growth Theory	264
8.7	The Geography of Economic Evolution	267

9	Evolution of Organisations and Institutions	271
9.1	Theories of Organisations	271
9.2	Population Ecology of Organisations	273
9.3	Demography of Firms	278
9.4	Evolution of Institutions	280
9.5	Self-organisation and Emergence	284
9.6	Adaptive Self-organisation	287
10	Technological Evolution	290
10.1	The Tree of Technology	290
10.2	Inventions and Innovations at Firm Level	291
10.3	Innovation Impacts and Diffusion at Market Level	302
10.4	Long Waves at a Macro Level	304
10.5	Increasing Returns, Path Dependence and Lock-in	308
10.6	Managing Technological Innovations	313
10.7	Optimal Technological Diversity	316
	Part V Evolutionary Cultural History	319
11	Prehistory Until the Rise of Agriculture	321
11.1	Social Science Palaeontology	321
11.2	Human Origins	322
11.3	Brain–Mind Evolution	332
11.4	Pre-agricultural, Pleistocene Humans	342
11.5	Fires, Dogs and Cats	344
11.6	Proximate Versus Ultimate Factors Behind the Rise of Agriculture	347
11.7	Between Neolithic and Industrial Revolutions	356
12	Industrialisation and Technological History	364
12.1	Preconditions and Ultimate Reasons	364
12.2	Middle Ages and Renaissance	369
12.3	Industrialisation After 1750	371
12.4	The Steam Engine from an Evolutionary Angle	372
12.5	Scientific (R)Evolution	374
12.6	European Origins	377
12.7	England Versus the Low Countries	379
12.8	The Rise and Fall of Population Growth	385
	Part VI Evolutionary Environmental and Policy Sciences	387
13	Survival of the Greenest	389
13.1	Human Maladaptation	389
13.2	Evolution in Environmental Social Studies	390
13.3	Managing Evolutionary Resources and Ecosystems	393

13.4	Coevolution and Evolutionary Growth	400
13.5	Evolutionary Transition to a Sustainable Economy	402
13.6	Diversity to Avoid or Escape Lock-in	405
13.7	Environment in Evolutionary Social Science	408
14	Evolving Solutions for Climate Change	411
14.1	Consumption, Production and Population Externalities	411
14.2	Evolutionary Analysis and Design of Climate Policies	414
14.3	Evolution of Low-carbon Technologies	419
14.4	Ultimate Effects of Climate Innovation and Policies	424
14.5	Policy Mix for Innovation and Diffusion	427
15	Evolutionary Policy and Politics	433
15.1	Towards an Evolutionary Policy Theory	433
15.2	Policy Criteria and Evolutionary Progress	434
15.3	Evolutionary Studies of Policy Design	438
15.4	Evolutionary Political Dynamics and Policy Change	441
15.5	Differences with Conventional Policy Approaches	445
15.6	Towards Evolutionary Socioeconomic Policy	448
16	Evolutionary Futures	451
16.1	Science and Technology	451
16.2	Cultures and Religions	453
16.3	Economic and Political Systems	456
16.4	The Biosphere	459
16.5	Future Humans	460
16.6	More Futurist Scenarios	465
16.7	Prospect for Expanded Evolutionary Thinking	467
	<i>References</i>	472
	<i>Index</i>	516
	<i>Colour plates can be found between pages 274 and 275</i>	