

Contents

I. Introduction	1
II. The Elements of Evolution	3
1. Hierarchies and Reductionism	3
2. Elements of the Evolutionary Process	6
a) Inheritance, Replicators, and Vehicles	6
b) Variation	9
c) Selection	13
d) Genetic Drift	16
e) Isolation and Speciation	17
3. Levels of Selection	18
a) Genets	18
b) Kin-Groups	21
c) Groups	24
4. Other Replicators and Vehicles	28
III. Adaptations and their Characteristics	34
1. The Meaning of Adaptation	34
2. Adaptations from Four Perspectives	41
a) Phylogeny	41
b) Function	47
c) Mechanism	48
d) Ontogeny	50
3. Analysing Adaptations	52
a) Maximisation Subject to Constraints	52
b) Optimisation and Maximisation	59
c) The Manifestation of Adaptations	65
IV. Evolution and the Human Psyche	71
1. The Cognitive Level and Evolutionary Psychology	71
2. Investigating the Cognitive Level	74
a) The Environment of Evolutionary Adaptedness	74
b) Cognitive Programs and Computational Theories	75
c) Darwinian Algorithms	78
d) Ontogeny and Behaviour	82

3.	Evolutionary Psychology and the Wason Selection Task	83
a)	Content Effects on the Wason Selection Task	83
b)	A Computational Analysis of Social Exchange	86
c)	The "Look for Cheaters" Darwinian Algorithm	89
4.	Accounting for Hominid Cognitive Development	93
a)	Encephalisation	93
b)	The Capacity for Sociality	101
c)	The "Balance of Power" Hypothesis	103
V.	From Psychology to Behaviour	113
1.	Genet Maximisation	113
a)	Specification of Somatic Maximisation	113
b)	Habitat Selection	118
c)	Responses to Hazards and Risks	121
d)	Avoidance of Unprofitable Investment	127
2.	Kin-Group Maximisation	133
a)	Specification of Kin-Group Maximisation	133
b)	Sexual Preferences	137
c)	Male Reproductive Strategies	139
3.	Group Maximisation	146
a)	Specification of Group Maximisation	146
b)	Obedience	149
c)	Conformity	153
d)	Obedience and Conformity as Community Effort	157
4.	Aggregate Maximisation and Non-Optimality	165
VI.	Homo Biologicus and Human Characteristics	168
1.	Characterising Homo Biologicus	168
2.	Homo Biologicus versus Homo Oeconomicus	181
a)	Choice under Uncertainty	181
b)	Excess Volatility in Securities Markets	188
c)	Household Behaviour and Family Altruism	193
d)	War	196
3.	Linking the Human Sciences	201
4.	Evolutionary Research and Human Characteristics	212
a)	Opposition to Evolutionary Research	212
b)	Consequences of "Biophobia"	215
c)	Diversity and Discrimination	218
d)	Determinism and Freedom	221
VII.	Summary and Implications	226

Glossary	228
Subject Index	239
Author Index	249
Selected Bibliography	257

Illustrations

Figure 3.1	Adaptations from Four Perspectives	42
Figure 3.2	The Biological Transformation Locus and the Fitness Indifference Curve	55
Figure 3.3	Productivity below the Transformation Locus	58
Figure 3.4	Functionality below the Fitness Indifference Curve	59
Figure 3.5	Biological Trade and Expropriation	70
Figure 4.1	Wason Selection Task Abstract Problem	84
Figure 4.2	Wason Selection Task Drinking Age Problem	85
Figure 4.3	Structure of Social Contract Problems	89
Figure 4.4	Allometric Relationships between Brain and Body Weights for 309 Extant Placental Mammal Species	96
Figure 4.5	Log Endocranial Volume Against Actual or Estimated Geological Age for Fossil and Living Hominids	99
Figure 5.1	Levels of Effort over a Hypothetical Human Lifetime	119
Figure 5.2	Age-Specific Rates of Homicide Victimization by (A) Genetic Parents or (B) Stepparents	133
Figure 5.3	Genetic Relationships with Putative Offspring	141
Figure 5.4	Percent Rape Victims and Percent Females in the Population in Relation to Female Age	145
Figure 5.5	Location of Participants in the Initial Obedience Experiment	150
Figure 5.6	Mean Shock Levels in Group Pressure Experiment	155
Figure 6.1	Real Stock Prices and their Perfect Foresight Counterparts 1871 to 1986	191