

TABLE OF CONTENTS

PREFACE	ix
FRANZ M. WUKETITS / Evolutionary Epistemology – A Challenge to Science and Philosophy	1
1. Introduction	1
2. The Notion of the Innate – Immanuel Kant and Beyond	2
3. Patterns of Nature and the Nature of Cognition or, ‘Why the Eye is Attuned to the Sun’	10
4. The Interdisciplinary Foundation of Evolutionary Epistemology	15
5. The Challenge to Science and Philosophy	21
(a) Towards a New Image of Man	21
(b) Towards Rationality and Objective Knowledge	23
(c) Towards a New Epistemology	24
6. Summary and Conclusion	25
Notes	26
Bibliography	29
RUPERT RIEDL / Evolution and Evolutionary Knowledge – On the Correspondence Between Cognitive Order and Nature	35
1. Separate Approaches	35
2. Judgements and Prejudices	36
3. The Theory of Evolution	36
4. Epistemological Questions	38
5. Nature and Thinking	39
6. A System of Hypotheses	40
7. Natural and Cognitive Order	45
8. The Kantian Apriori	46
9. Summary	47
Notes	47
Bibliography	48

ROBERT KASPAR / A Short Introduction to the Biological Principles of Evolutionary Epistemology	51
1. Life as a Cognition Process	51
1.1. Evolution and Entropy	51
1.2. Maximization of Information in the Genome	51
1.3. Systematization of Living Order	52
1.4. The Nervous System and the Ratiomorphic Apparatus	54
2. The “Hypotheses” of the Ratiomorphic Apparatus	56
3. Summary	64
Notes	65
Bibliography	67
GERHARD VOLLMER / Mesocosm and Objective Knowledge – On Problems Solved by Evolutionary Epistemology	69
1. Introduction	69
2. Facts and Fits – What Evolutionary Epistemology Tries to Explain	69
3. Tenets and Traits – What Evolutionary Epistemology Does Assert	75
4. Caveats and Corrections – What Evolutionary Epistemology Does Not Assert	82
5. Mesocosm and Visualization	87
6. Projection and Reconstruction	94
7. Objectivity and Invariance	100
8. Mathematics and Reality	106
9. Causality and Energy Transfer	109
10. Mind and Evolution	114
11. Unfinished Tasks and Unsolved Problems	118
Bibliography	121
FRANZ SEITELBERGER / Neurobiological Aspects of Intelligence	123
Bibliography	147
ERHARD OESER / The Evolution of Scientific Method	149
1. The Historical Background	150
2. Objective Scientific Knowledge as a Break with the Ratiomorphic Past: The “Third” Evolution	151

3. The Systematic Relationship of Empirical-Evolutionary Epistemology and Meta-Empirical or Pure "Transcendental" Epistemology	154
4. Information and Knowledge	157
5. Science as an Evolutionary Information System	171
6. The "Law of Three Stages" of the Evolution of Method	175
Notes	182
Bibliography	183
HANS MOHR / The Ethics of Science: Compatible with the Concept of Evolutionary Epistemology?	185
1. The Traditional Viewpoint	185
2. Values	185
3. Science	186
3.1. Objective Knowledge as the Sovereign Good	187
3.2. The Guiding Thesis of this Chapter	187
4. Motivation of Science	188
5. Scientific Communities	191
6. The Ethics of Science	192
6.1. The Intuitively Conceived Code	192
6.2. The Explicit Code	192
7. Justification of the Code (Compatibility with Evolutionary Epistemology)	196
8. The Ethics of Science as a Partial Code of Conduct	199
9. Extension of the Ethics of Science to Society?	202
10. <i>Homo investigans</i> versus <i>Homo politicus</i>	202
11. Threats Bearing upon the Ethics of Science	204
Bibliography	206
REINHARD LÖW / The Metaphysical Limits of Evolutionary Epistemology	209
1. Evolutionary Epistemology is a Philosophical Proposal	210
2. As a Philosophical Theory, Evolutionary Epistemology is a Variant of Naturalistic Realism	212
3. Evolutionary Epistemology and Causality	215
4. Difficulties with the Principle of "Fulguration"	221
5. By Its Claim to Truth, Evolutionary Epistemology Annuls Itself	222

6. Evolutionary Epistemology is Unable to Support Its Own Ethical Claims	223
7. Evolutionary Epistemology and Ethics	225
Notes	227
Selected Bibliography	230
WERNER LEINFELLNER / Evolutionary Causality, Theory of Games, and Evolution of Intelligence	233
1. A Model for Evolutionary Causality	233
2. The Equivalence of the Theory of Evolution and Dynamic Games	246
3. Evolutionary Epistemology, Memory, and Intelligence	262
References	276
FRANZ M. WUKETITS / Evolutionary Epistemology — A New Copernican Revolution?	279
Notes	283
Bibliography	284
APPENDIX. GÜNTER P. WAGNER / The Logical Basis of Evolutionary Epistemology	285
1. The Limits of the Analytical Approach	286
2. The Logical Structure of the Evolutionary Approach to Epistemological Questions	289
3. Consistency Proof for Riedl's Probability Hypothesis	292
4. The Problem of Theoretical Terms in Evolutionary Perspective	299
4.1. The Structure of Theoretical Terms	299
4.2. Why Theoretical Terms Remain a Problem	300
4.3. The Example of the Term "Homology": Towards a Non-linear Logic?	303
Notes	305
Bibliography	306
INDEX OF NAMES	309
INDEX OF SUBJECTS	314