

Contents

Preface

	ix
1 Science: Why, and How? Some Basic Ideas in Scientific Method	1
1.1 Introduction: Why Science?	2
1.2 Knowledge: Realism and Idealism (Relativism), Common Sense and Science	4
1.3 Arguments: Deduction, Induction, Abduction	11
1.4 Laws, Theories, Models and Causes	19
1.5 Conclusion	31
Further Reading	31
2 Kind of Explanations: Laws, Interpretations and Functions	32
2.1 Introduction: Modes of Explanation: Nomological, Hermeneutical, Functional	32
2.2 Nomological Explanation: The Classical View and its Problems	33
2.3 Hermeneutic Understanding: An Alternative to Nomological Explanation	41
2.4 Functional and Teleological Explanation	45
2.5 A New Development in Functional Explanation: Mechanistic Explanation	53
2.6 Reduction and Levels of Explanation	57
2.7 Conclusion: The Multiplicity of Explanation	67
Further Reading	68
3 Philosophy of Science (1): Logical Positivism and its Failure	69
3.1 Introduction: Scientific Methods, Objectivity and Rationality	69
3.2 Logical Positivism and Demarcation	71
3.3 Wittgenstein's Volte-Face	77
3.4 The Impossibility of Logical Empiricism: Observation and Theory	79
3.5 Further Trouble for Logical Positivism: Holism, Underdetermination, and Theory-Ladenness	82

3.6	Demarcation Revived – Popper	86
3.7	Demarcation Abandoned: Kuhn on Paradigms and Scientific Revolutions	92
3.8	Rational Reconstruction and Methodological Anarchism: Lakatos and Feyerabend	99
3.9	Since Kuhn: Post-Positivism in a Nutshell	102
3.10	Conclusion: The Moral on Demarcation	105
	Further Reading	106
4	Philosophy of Science (2): Criticism and Alternatives to Positivism	108
4.1	Introduction: Doubts about Objectivity	108
4.2	Hermeneutics: History and Language, Understanding and Interpretation	109
4.3	Social Constructionism	115
4.4	Rhetoric, Discursive Psychology and Psychology as Criticism	118
4.5	Problems of Realism and Relativism	123
4.6	Revisions of Realism: Knocking the Rough Edges Off	130
4.7	Pragmatism: Between Realism and Relativism	137
4.8	Conclusion: Salvaging Objective Knowledge	141
	Further Reading	144
5	Sociology and Psychology of Science	145
5.1	Introduction: Science as a Human Activity	145
5.2	Ideology and the Critical Theory	147
5.3	Social History of Science	151
5.4	The Social Character of Scientific Knowledge and the Strong Programme	153
5.5	The Sociology of Scientific Practice	157
5.6	The 'Science Wars'	164
5.7	Psychology of Science: Cognitive Origins of Science	166
5.8	Conclusion: The Social and Psychological Nature of Scientific Knowledge	171
	Further Reading	173
6	Introducing Philosophy of Mind, Brain and Cognition	175
6.1	Introduction: What is Mind?	175
6.2	Traditional Views on the Nature of Mind: Dualism, Materialism, Behaviourism	177
6.3	Aspects of Mind: Intelligence and Consciousness	182

6.4	Intentionality: Another Aspect of Mind	184
6.5	Various Interpretations of Intentionality	187
6.6	Folk Psychology, Intentionality and Mind-reading	197
6.7	Mental Causation	202
6.8	Three Perspectives on Mind and Brain: Multiplicity of Explanations	206
6.9	Conclusion: Explanations in the Study of Mind, Brain and Agency	211
	Further Reading	213
7	Modern Approaches to Mind (1): The Language-based View: Functionalism and the Computational Theory of Mind	214
7.1	Introduction: The Origins of Computationalism	214
7.2	Functionalism, Multiple Realization and the Autonomy of Cognitive Science	216
7.3	Computation and Formal Languages	223
7.4	The Computational Theory of Mind: Representations, Symbols, Meaning and Intentionality	227
7.5	Artificial Intelligence and the Idea of a Physical Symbol System	235
7.6	Conclusion: Classical Computationalism in Trouble	241
	Further Reading	242
8	Modern Approaches to Mind (2): The Brain-based View: Neurophilosophy, Connectionism and Dynamicism	243
8.1	Introduction: An Alternative View on Mind	243
8.2	Symbols versus Networks	245
8.3	The Third Contender: Dynamicism, Representations Abandoned?	256
8.4	Neurophilosophy and Naturalism	264
8.5	Folk Psychology: Vindicated or Eliminated?	271
8.6	Conclusion: Three Views of Mind: Symbols, Networks or Dynamic Systems?	275
	Further Reading	278
9	The Extended Mind: Biology, Body, and Environment	279
9.1	Introduction: Out of Our Heads	279
9.2	Evolutionary Psychology: Adaptations as Explanations	280
9.3	A-Life: Life from the Bottom Up	288
9.4	Mind in Action: Uniting Brain, Body and World	290
9.5	The Body in the Mind	296

9.6	Beyond the Individual Mind: Cultural and Linguistic Origins	299
9.7	Conclusion and a Note on Methods	307
	Further Reading	309
10	Consciousness and Free Will	310
10.1	Consciousness and Qualia	311
10.2	Mentalistic and Naturalistic Theories on Consciousness	312
10.3	A Tentative Definition: The External and Internal Perspective	320
10.4	Phenomenal Consciousness	321
10.5	Brainwork Organization	324
10.6	Searching for the Neural Correlate of Consciousness	325
10.7	Problems for the Idea of Correlation	328
10.8	Is Consciousness Nothing but Brainworks?	331
10.9	To Sum Up: If Consciousness is not an Illusion	333
10.10	Free Will, Determinism and Responsibility	334
10.11	Dennett's Naturalistic Account	339
10.12	Free Will, Consciousness and Self-Regulation	340
10.13	Conclusion: Consciousness, Free Will and Conscious Control	342
	Further Reading	343
	Boxes	344
	Glossary	346
	Bibliography	364
	Author Index	391
	Subject Index	393