

# Contents

List of Figures	xi
Introduction	1
PART I NECESSARY CONNECTIONS AND THREE HYPOTHESES	
1 Necessary Connections	13
1.1 The Nature of Causes and Causal Circumstances	13
1.2 Connections Stated by Dependent Conditionals	16
1.3 'If A, even if X, then still B'	24
1.4 The Analysis of Conditional Statements	31
1.5 Causal Versus Other Nomic Connections	40
1.6 The View Defended	50
1.7 Summary	69
2 Psychoneural Nomic Correlation	71
2.1 Consciousness—Looking Elsewhere	71
2.2 Mental Realism	77
2.3 Identity Theories	89
2.4 The Hypothesis of Psychoneural Nomic Correlation	106
2.5 Mixed Objections	113
2.6 Wittgenstein and Others	121
2.7 Definitional Precedents, Holism, Indeterminacy of Translation, Domains	134
3 The Causation of Psychoneural Pairs	145
3.1 Personal Indispensability, Causal Sequences	145
3.2 Causal Interactionism, Neural Causation with Psychoneural Correlation, the Psychoneural Relation as Macromicro	151
3.3 The Hypothesis on the Causation of Psychoneural Pairs	163
3.4 The Defining Goal of Indeterminist Theories of the Mind	175
3.5 Indeterminist Theories—First Element	180
3.6 Second Element, with Originator to the Rear	184
3.7 Second Element, with Originator to the Fore	194
3.8 The Originator's Relation to Mental Events	199
3.9 Conclusion	207

4 The Causation of Actions	209
4.1 Actions as Bodily, and as Compounds	209
4.2 The Mental Terms	216
4.3 The Relation and the Bodily Term	231
4.4 The Hypothesis on the Causation of Actions	244
4.5 Objections	251
4.6 The Completed Theory of Determinism	256
PART 2 THE TRUTH OF THE THEORY	
5 Neuroscience and Quantum Theory	261
5.1 The Neuron and the Brain	261
5.2 Neuroscientific Evidence Relating to the First Hypothesis	269
5.3 Evidence Relating to the Second Hypothesis	287
5.4 Evidence Relating to the Third Hypothesis	296
5.5 Supposedly Contrary Neuroscientific Evidence	310
5.6 Quantum Theory	304
5.7 Conclusion, Partly Tentative	334
6 Prediction and Knowledge	337
6.1 Conditional Predictability	337
6.2 Newcomb Problems	339
6.3 The Transition Towards Action and Our Commonplace Scheme of Explanation	342
6.4 Determinism Without Predictability	347
6.5 Gödel Sentences	350
6.6 A Failure of Neuroscience	355
6.7 Determinism and Knowledge	360
6.8 Conclusion on the Truth of the Theory of Determinism	373
PART 3 THE CONSEQUENCES OF DETERMINISM	
7 Two Families of Attitudes, and Dismay and Intransigence	379
7.1 Seven Questions	379
7.2 Life-Hopes and Dismay	382
7.3 Life-Hopes and Intransigence	393
7.4 Personal Feelings	400
7.5 Knowledge	410
7.6 Morality	420
7.7 Moral Approval and Disapproval	430
7.8 Conclusion	448
8 Compatibilism and Incompatibilism	451
8.1 A Long Battle	451
8.2 Compatibilism and Incompatibilism Defined	472
8.3 Compatibilism and Incompatibilism: Both False	475

<b>9 Affirmation</b>	<b>488</b>
9.1 The True Problem of Consequences	488
9.2 Life-Hopes	496
9.3 Personal Feelings	517
9.4 Knowledge	521
9.5 Morality	525
9.6 The Possibility of Affirmation	530
9.7 Recapitulation	537
<b>10 Punishment, Society, Politics</b>	<b>541</b>
10.1 Institutions, Practices, Habits	541
10.2 Punishment and Agreement-Claims	548
10.3 Punishment and Desert-Claims—Traditional Views	561
10.4 Punishment and Desert-Claims—Another View	569
10.5 The Theories of Punishment	582
10.6 Other Social Facts	591
10.7 Politics	601
10.8 Retrospect of the Book	613
<b>References</b>	<b>615</b>
<b>Index</b>	<b>637</b>

## *List of Figures*

Fig. 1 Nomic or Necessary Connections	48
Fig. 2 Dualistic Identity Theory with Neural Causation	95
Fig. 3 Variant of Anomalous Monism	98
Fig. 4 Incomplete Model of Two-Level Identity Theory	100
Fig. 5 Two-Level Identity Theory	101
Fig. 6 Local Idealism	103
Fig. 7 Eliminative Materialism	103
Fig. 8 Semi-Eliminative Materialism	105
Fig. 9 Causal Sequence	149
Fig. 10 Causal Interactionism	152
Fig. 11 Neural Causation with Psychoneural Correlation	155
Fig. 12 The Psychoneural Relation as Macromicro	158
Fig. 13 Supplemented Causal Interactionism	162
Fig. 14 Mixed Causal Circumstances	162
Fig. 15 Hypothesis of Psychoneural Nomic Correlation and Hypothesis on the Causation of Psychoneural Pairs	165
Fig. 16 <i>Not</i> the Proposition of Psychoneural Pairs or the Hypothesis on the Causation of Psychoneural Pairs	166
Fig. 17 Elements of Indeterminist Theories of the Mind	181
Fig. 18 Further Elements of Indeterminist Theories of the Mind	206
Fig. 19 Hypothesis of Psychoneural Nomic Correlation, Hypothesis on the Causation of Psychoneural Pairs, Hypothesis on the Causation of Actions	248
Fig. 20 Principal Structures of The Most Common Type of Neuron	261
Fig. 21 Various Types of Neurons	262
Fig. 22 Propagation of Action Potential down Axon	264
Fig. 23 Sensory Homunculus	271

Fig. 24 Brodmann Cell-Architecture Map	272
Fig. 25 Visual Field Mapped on to Visual Cortex	273
Fig. 26 Left and Right Hemisphere Function	278
Fig. 27 Motor Homunculus	298
Fig. 28 Cerebral Cortex	299
Fig. 29 Two-Slit Experiment	310
Fig. 30 Particle Arrivals with One Slit Open	310
Fig. 31 Expected Curve with Both Slits Open	311
Fig. 32 Curve with Both Slits Open	312