

CONTENTS

.....

Contributors, ix

Introduction, 3

John Bickle

PART I: EXPLANATION, REDUCTION, AND METHODOLOGY IN NEUROSCIENTIFIC PRACTICE

1. Molecules, Systems, and Behavior: Another View
of Memory Consolidation, 13
William Bechtel
2. Biological Clocks: Explaining with Models of Mechanisms, 41
Sarah K. Robins and Carl F. Craver
3. Methodology and Reduction in the Behavioral Neurosciences:
Object Exploration as a Case Study, 68
Anthony Chemero and Charles Heyser
4. The Science of Research and the Search for Molecular Mechanisms
of Cognitive Functions, 91
Alcino J. Silva and John Bickle

PART II: LEARNING AND MEMORY

5. The Lower Bounds of Cognition: What Do Spinal Cords Reveal? 129
Colin Allen, James W. Grau, and Mary W. Meagher
6. Lessons for Cognitive Science from Neurogenomics, 143
Alex Rosenberg
7. Learning, Neuroscience, and the Return of Behaviorism, 166
Peter Machamer

PART III: SENSATION AND PERCEPTION

8. fMRI: A Modern Cerebrascope? The Case of Pain, 179
Valerie Gray Hardcastle and C. Matthew Stewart
9. The Embedded Neuron, the Enactive Field? 200
Mazviita Chirimuuta and Ian Gold
10. The Role of Neurobiology in Differentiating the Senses, 226
Brian L. Keeley
11. Enactivism's Vision: Neurocognitive Basis
or Neurocognitively Baseless? 251
Charles Wallis and Wayne Wright

PART IV: NEUROCOMPUTATION AND NEUROANATOMY

12. Space, Time, and Objects, 311
Rick Grush
13. Neurocomputational Models: Theory, Application,
Philosophical Consequences, 346
Chris Eliasmith
14. Neuroanatomy and Cosmology, 370
Christopher Cherniak

PART V: NEUROSCIENCE OF MOTIVATION, DECISION MAKING, AND NEUROETHICS

15. The Emerging Theory of Motivation, 381
Anthony Landreth
16. Inference to the Best Decision, 419
Patricia Smith Churchland
17. Emergentism at the Crossroads of Philosophy, Neurotechnology, and
the Enhancement Debate, 431
Eric Racine and Judy Illes
18. What's "Neu" in Neuroethics? 454
Adina L. Roskies

PART VI: NEUROPHILOSOPHY AND PSYCHIATRY

19. Confabulations about People and Their Limbs,
Present or Absent, 473
William Hirstein
20. Delusional Experience, 513
Jennifer Mundale and Shaun Gallagher
21. The Case for Animal Emotions: Modeling
Neuropsychiatric Disorders, 522
Kenneth Sufka, Morgan Weldon, and Colin Allen

PART VII: NEUROPHILOSOPHY

22. Levels, Individual Variation, and Massive Multiple Realization
in Neurobiology, 539
Kenneth Aizawa and Carl Gillett
23. Neuro-Eudaimonics or Buddhists Lead Neuroscientists
to the Seat of Happiness, 582
Owen Flanagan
24. The Neurophilosophy of Subjectivity, 601
Pete Mandik

Index, 619