## Contents

Foreword by David Chalmers ix
Introduction: BRAINBOUND Versus EXTENDED xxv
I: FROM EMBODIMENT TO COGNITIVE EXTENSION
1. The Active Body 3
1.1 A Walk on the Wild Side 3
1.2 Inhabited Interaction 9
1.3 Active Sensing 11
1.4 Distributed Functional Decomposition 13
1.5 Sensing for Coupling 15
1.6 Information Self-structuring 17
1.7 Perceptual Experience and Sensorimotor Dependencies 2
1.8 Time and Mind 23
1.9 Dynamics and "Soft" Computation 27
1.10 Out from the Bedrock 28
2. The Negotiable Body 30
2.1 Fear and Loathing 30
2.2 What's in an Interface? 31

2.3 New Systemic Wholes 33

2.5 Incorporation Versus Use 37

2.4 Substitutes 35

2.6	Toward Cognitive Extension 39
2.7	Three Grades of Embodiment 42
3. Materia	Symbols 44
3.1	Language as Scaffolding 44
3.2	Augmenting Reality 45
3.3	Sculpting Attention 47
3.4	Hybrid Thoughts? 50
3.5	From Translation to Coordination 53
3.6	9
3.7	Self-made Minds 59
TAT 11 T	
	ncorporated 61
4.1	Cognitive Niche Construction 61
4.2	Cognition in the Globe: A Cameo 63
4.3	Thinking Space 64
	Epistemic Engineers 66
	Exploitative Representation and Wide Computation 68
-	Tetris: The Update 70
4.7	, ,
4.8	Extending the Mind 76
4.9	BRAINBOUND Versus EXTENDED: The Case So Far 81
II: BOUND	ARY DISPUTES
5. Mind Re	
5.1	EXTENDED Anxiety 85
•	Pencil Me In 85
5.3	1 0
5.4	2 /
5·5	The Mark of the Cognitive? 92
	Kinds and Minds 93
_	Perception and Development 99
5.8	Deception and Contested Space 102 Folk Intuition and Cognitive Extension 102
5.9	Folk Intuition and Cognitive Extension 105 Asymmetry and Lopsidedness 106
5.11	Hippo-world 109
6. The Cure	e for Cognitive Hiccups (HEMC, HEC, HEMC) 111
6.1	Rupert's Challenge 111
6.2	The HEC Versus the HEMC 112
6.3	Parity and Cognitive Kinds, Again 114
6.4	The Persisting Core 116
~	

6.5	Cognitive Impartiality 118
6.6	A Brain Teaser 122
6.7	Thoughtful Gestures 123
6.8	Material Carriers 126
6.9	Loops as Mechanisms 129
6.1	o Anarchic Self-stimulation 131
6.1	1 Autonomous Coupling 133
6.1	2 Why the HEC? 135
6.1	The Cure 138
7. Redisco	vering the Brain 140
7.1	Matter into Mind 140
7.2	Honey, I Shrunk the Representations 141
7.3	Change Spotting: The Sequel 143
7.4	Thinking About Thinking: The Brain's Eye View 146
7.5	Born-again Cartesians? 149
7.6	Surrogate Situations 152
7.7	Plug Points 156
7.8	Brain Control 159
7.9	Asymmetry Arguments 162
7.10	EXTENDED in a Vat 163
7.1	The (Situated) Cognizer's Innards 165
III: THE LI	MITS OF EMBODIMENT
8. Painting	, Planning, and Perceiving 169
8.1	Enacting Perceptual Experience 169
8.2	The Painter and the Perceiver 170
8.3	· · · · · · · · · · · · · · · · · · ·
8.4	_
	What Reaching Teaches 180
8.6	_
8.7	
8.8	Virtual Content, Again 193
8.9	Beyond the Sensorimotor Frontier 195
,	,
9. Disentar	ngling Embodiment 196
9.1	Three Threads 196
9.2	The Separability Thesis 198
9.3	Beyond Flesh-eating Functionalism 200
9.4	Ada, Adder, and Odder 202
9.5	A Tension Revealed 204
	What Bodies Are 206

## xxiv contents

9.7	Participant Machinery and Morphological Computation		
9.8	Quantifying Embodiment	213	
9.9	The Heideggerian Theater	216	

10. Conclusions: Mind as Mashup 218

Appendix: The Extended Mind, by Andy Clark and David Chalmers 220

Notes 233
References 255
Index 277