## **Contents**

| Abbreviations | vii |
|---------------|-----|
| Abbreviations | vii |

Contributors ix

1 Introduction to embodied communication: why communication needs the body *I* 

Ipke Wachsmuth, Manuela Lenzen, and Giinther Knoblich

2 Some boundary conditions on embodied agents sharing a common world 29

\*\*John Barresi\*\*

3 Toward a theory of embodied communication: self-sustaining wild systems as embodied meaning 53

J. Scott Jordan

4 Synchrony and swing in conversation: coordination, temporal dynamics, and communication *75* 

Daniel C. Richardson, Rick Dale, and Kevin Shockley

- 5 The visual perception of dynamic body language 95 Maggie Shiffrar
- 6 Mirrors for embodied communication 111 Wolfgang Prinz
- 7 The role of the mirror system in embodied communication 129

  Natalie Sebanz and Giinther Knoblich
- 8 Everything is movement: on the nature of embodied communication 151 Elisabeth Oberzaucher and Karl Grammer
- 9 Communication and cooperation in living beings and artificial agents 179 Achim Stephan, Manuela Lenzen, Josep Call, and Matthias Uhl
- 10 Laborious intersubjectivity: attentional struggle and embodied communication in an auto-shop 201 Jtirgen Streeck
- 11 The emergence of embodied communication in artificial agents and humans 229

  Bruno Galantucci and Luc Steels
- 12 Dimensions of embodied communication—towards a typology of embodied communication 257

  Jens Allwood
- 13 Neurological disorders of embodied communication 285 Elisabeth Ahlsén

- 14 Gestural imagery and cohesion in normal and impaired discourse 305 Susan Duncan
- 15 Conversational metacognition 329 Joe'lle Proust
- 16 Imitation in embodied communication—from monkey mirror neurons to artificial humans 357 Stefan Kopp, Ipke Wachsmuth, James Bonaiuto, and Michael Arbib
- 17 Persuasion and the expressivity of gestures in humans and machines 391 Isabella Poggi and Catherine Pelachaud
- 18 Implementing a non-modular theory of language production in an embodied conversational agent 425 Timo Sowa, Stefan Kopp, Susan Duncan, David McNeill, and Ipke Wachsmuth
- 19 Towards a neurocognitive model of turn taking in multimodal dialog 451 James Bonaiuto and Kristinn R. Thórisson