## Contents

**Acknowledgements** ........................................................................................................ v

**Introduction** .................................................................................................................. vii
Arturo Carsetti

**Part I  Consciousness, Intentionality and Self-Organization**

1  **The Link Between Brain Learning, Attention, and Consciousness**  ........................................ 3
Stephen Grossberg

2  **Emergence of Intentional Procedures in Self-Organizing Neural Networks**  .................. 47
Henri Atlan and Yoram Louzoun

3  **Action Goal Representation and Action Understanding in the Cerebral Cortex**  .......... 57
Leonardo Fogassi

**Part II  Truth, Randomness and Impredicativity**

4  **The Genesis of Mathematical Objects, Following Weyl and Brouwer**  .......................... 77
Dirk van Dalen

5  **Randomness, Determinism and Programs in Turing’s Test**  ................................. 87
Giuseppe Longo

6  **$\Omega$-Incompleteness, Truth, Intentionality** .......................................................... 113
Sergio Galvan

**Part III  Complexity, Incomputability and Emergence**

7  **Leibniz, Complexity and Incompleteness** ............................................................ 127
Gregory Chaitin
8 Incomputability, Emergence and the Turing Universe ............................ 135
   S. Barry Cooper

9 Computational Models of Measurement and Hempel’s Axiomatization ................................................. 155
   Edwin Beggs, José Félix Costa, and John V. Tucker

10 Impredicativity of Continuum in Phenomenology and in Non-Cantorian Theories ........................................... 185
   Stathis Livadas

Part IV Epistemic Complexity and Causality

11 Reasons Against Naturalizing Epistemic Reasons: Normativity, Objectivity, Non-computability ......................... 203
   Julian Nida-Rümelin

12 Some Remarks on Causality and Invariance ........................................... 211
   Raffaella Campaner and Maria Carla Galavotti

13 Epistemic Complexity from an Objective Bayesian Perspective ............................................................................. 231
   Jon Williamson

Part V Embodied Cognition and Knowledge Construction

14 The Role of Creativity and Randomizers in Human Cognition and Problem Solving ............................................ 249
   Werner Leinfellner

15 The Emergence of Mind: A Dualistic Understanding ........................................... 265
   Antonella Corradini

16 Doing Metaphysics with Robots ........................................................................... 275
   Domenico Parisi

17 Knowledge Construction, Non-Standard Semantics and the Genesis of the Mind’s Eyes ........................................... 283
   Arturo Carsetti

Author Index ......................................................................................... 301

Subject Index ....................................................................................... 307