### Contents

**Part I Philosophy**

1. **Space as a Source and as an Object of Knowledge:**
   The Transformation of the Concept of Space in the Post-Kantian Philosophy of Geometry .................. 3  
   Francesca Biagioli

2. **Time in Physics and Time in Awareness** .......................... 15  
   E.C.G. Sudarshan

3. **Time and Space in Ancient India: Pre-philosophical Period** . . . . . . 23  
   Nataliya Yanchevskaya and Michael Witzel

4. **Śrīharṣa on the Indefinability of Time** .......................... 43  
   Jonathan Duquette and Krishnamurti Ramasubramanian

5. **From Time to Time** ......................................... 61  
   Nathan Salmon

6. **Why Spacetime Has a Life of Its Own** .......................... 77  
   James Robert Brown

7. **The Phenomenology of Space and Time: Husserl,**
   **Sartre, Derrida** ........................................... 87  
   Hans Herlof Grelland

8. **Space, Time, and (How They) Matter** .......................... 95  
   Valia Allori

   Nicholas Maxwell
Part II  Physics

10. Nature’s Book Keeping System ........................................... 127
    Gerard ’t Hooft

11. Spacetime and Reality: Facing the Ultimate Judge .................. 137
    Vesselin Petkov

12. The Future’s Not Ours to See ........................................... 149
    Anthony Sudbery

13. Hermann Weyl’s Space-Time Geometry and Its Impact on Theories of Fundamental Interactions ..................... 159
    Norbert Straumann

14. Matter, Space, Time, and Motion: A Unified Gravitational Perspective ......................................................... 167
    C.S. Unnikrishnan

15. An Anomaly in Space and Time and the Origin of Dynamics ...... 185
    Joan A. Vaccaro

16. Space, Time, and Adynamical Explanation in the Relational Blockworld ......................................................... 203
    W.M. Stuckey, Michael Silberstein and Timothy McDevitt

17. Spacetime Is Doomed ...................................................... 217
    George Musser

Part III  Mathematics

18. Geometry and Physical Space ........................................... 231
    Mary Leng

19. The Geometry of Manifolds and the Perception of Space .......... 239
    Raymond O. Wells Jr.

20. Paradox? the Mathematics of Space-Time and the Limits of Human Understanding ........................................... 253
    Paul Ernest

21. “Now” Has an Infinitesimal Positive Duration ........................ 271
    Reuben Hersh

22. What’s Wrong with the Platonic Ideal of Space and Time? ...... 279
    Lorenzo Sadun

23. The Fundamental Problem of Dynamics ................................. 287
    Julian Barbour

24. General Relativity, Time, and Determinism ........................... 299
    James Isenberg
25. Topos Theoretic Approach to Space and Time ................. 313
    Goro C. Kato

Part IV Biology/Cognitive Science

26. Syntactic Space .......................................... 327
    Rajesh Kasturirangan

27. Time Measurement in Living Systems: Human Understanding
    and Health Implications ................................. 337
    Lakshman Abhilash and Vijay Kumar Sharma

28. The Cellular Space—The Space of Life ...................... 353
    Pier Luigi Luisi

29. The Consciousness of Space, the Space of Consciousness .... 359
    Mauro Bergonzi and Pier Luigi Luisi

30. Time and Suffering: False Metaphors, (De-)Synchronous
    Times, and Internal Dynamics .............................. 371
    Norman Sieroka

31. Evolutionary Time and the Creation of the Space of Life .... 381
    Randall E. Auxier

Part V Logic/Computer Science

32. A Computational Mathematics View of Space, Time
    and Complexity ............................................. 403
    David H. Bailey and Jonathan M. Borwein

33. ‘Photographing the Footsteps of Time’: Space and Time
    in Charles Babbage’s Calculating Engines ................. 417
    Doron Swade

34. The Black Hole in Mathematics ............................ 429
    Alexander Keewatin Dewdney

35. Gödel Incompleteness and the Empirical Sciences .......... 443
    N.C.A. da Costa and F.A. Doria

36. Gödel’s Ontological Dreams ............................... 461
    Gary Mar

Part VI Miscellaneous

37. The Novel and the Map: Spatiotemporal Form and Discourse
    in Literary Cartography .................................... 479
    Robert T. Tally Jr.
38. Time, Space, and the Human Geographies of Opportunity ........ 487
    Donald G. Janelle

39. Losing Time and Space: Experiencing Immersion .............. 503
    Diana J. Reichenbach

Science, Mind, and Limits of Understanding ....................... 513

Authors Information—Affiliation/Mailing Address and Email Information ......................... 523

Titles in this Series ........................................... 527
Space, Time and the Limits of Human Understanding
Wuppuluri, S.; Ghirardi, G. (Eds.)
2017, XXIII, 530 p. 51 illus., Hardcover
ISBN: 978-3-319-44417-8