

Contents

INTRODUCTION	The Checkered Career of Hierarchical Thinking in Evolutionary Biology 1 <i>Niles Eldredge</i>
PART I	Hierarchy Theory of Evolution
LINKING SECTION	General Principles of Biological Hierarchical Systems 19 <i>Ilya Tëmkin and Emanuele Serrelli</i>
CHAPTER 1	Pattern versus Process and Hierarchies: Revisiting Eternal Metaphors in Macroevolutionary Theory 29 <i>Bruce S. Lieberman</i>
CHAPTER 2	Lineages and Systems: A Conceptual Discontinuity in Biological Hierarchies 47 <i>Gustavo Caponi</i>
CHAPTER 3	Biological Organization from a Hierarchical Perspective: Articulation of Concepts and Interlevel Relation 63 <i>Jon Umerez</i>
CHAPTER 4	Hierarchy: The Source of Teleology in Evolution 86 <i>Daniel W. McShea</i>

- CHAPTER 5 Three Approaches to the Teleological and Normative Aspects of Ecological Functions 103
Gregory J. Cooper, Charbel N. El-Hani, and Nei F. Nunes-Neto

PART 2 Hierarchical Dynamics: Process Integration across Levels

- LINKING SECTION Information and Energy in Biological Hierarchical Systems 127
Ilya Tëmkin and Emanuele Serrelli
- CHAPTER 6 Why Genomics Needs Multilevel Evolutionary Theory 137
T. Ryan Gregory, Tyler A. Elliott, and Stefan Linquist
- CHAPTER 7 Revisiting the Phenotypic Hierarchy in Hierarchy Theory 151
Silvia Caianiello
- CHAPTER 8 Multilevel Selection in a Broader Hierarchical Perspective 174
Telmo Pievani and Andrea Parravicini
- CHAPTER 9 Systems Emergence: The Origin of Individuals in Biological and Biocultural Evolution 202
Mihaela Pavličev, Richard O. Prum, Gary Tomlinson, and Günter P. Wagner

PART 3 Biological Hierarchies and Macroevolutionary Patterns

- LINKING SECTION Ecology and Evolution: Neither Separate nor Merged 227
Emanuele Serrelli and Ilya Tëmkin
- CHAPTER 10 Unification of Macroevolutionary Theory: Biologic Hierarchies, Consonance, and the Possibility of Connecting the Dots 243
William Miller III

CHAPTER 11	Coming to Terms with <i>Tempo and Mode</i> : Speciation, Anagenesis, and Assessing Relative Frequencies in Macroevolution 260 <i>Warren D. Allmon</i>
CHAPTER 12	Niche Conservatism, Tracking, and Ecological Stasis: A Hierarchical Perspective 282 <i>Carlton E. Brett, Andrew Zaffos, and Arnold I. Miller</i>
CHAPTER 13	The Stability of Ecological Communities as an Agent of Evolutionary Selection: Evidence from the Permian-Triassic Mass Extinction 307 <i>Peter D. Roopnarine and Kenneth D. Angielczyk</i>
CHAPTER 14	Hierarchy Theory in the Anthropocene: Biocultural Homogenization, Urban Ecosystems, and Other Emerging Dynamics 334 <i>Michael L. McKinney</i>
CONCLUSION	Hierarchy Theory and the Extended Synthesis Debate 351 <i>Telmo Pievani</i>
List of Contributors	365
Index	377