

Preface

In the wake of the Evolutionary Synthesis constituted in the 1930s, 1940s, and 1950s, historians and philosophers of biology have devoted considerable attention to the Darwinian tradition linking Charles Darwin to mid-twentieth-century developments in evolutionary biology. This historiographical focus may not be wholly coincidental, given the professionalization of the fields of history of science and philosophy of biology that accompanied the post-1960 era. Since then, more recent developments in evolutionary biology challenged the heritage of the Darwinian tradition as a whole or in part. Predictably, perhaps, this was followed by a historiographical “recalibration” by historians and philosophers toward other research programs and traditions since Darwin’s time.

As this recalibration is going on, it is difficult not to have the impression of confusion or dismay regarding what exactly happened in evolutionary biology. In order to dispel some of this confusion, it seems timely to reunite in this volume synthetic contributions concerned with historical, philosophical, and scientific issues. It is the main goal of this volume to contextualize the Darwinian tradition by raising such questions as: How should it be defined? Did it interact with other research programs? Were there any research programs whose developments were conducted largely independently of the Darwinian tradition? Authors of this volume explicitly reflect upon the nature of the relationship between the Darwinian tradition and other parallel research traditions.

A more traditional approach to the topic might have required organizing the volume’s contributions along themes like the “main Darwinian tradition,” “non-Darwinian theories,” “evolutionary biology in national traditions,” “pre-synthetic developments,” the “Evolutionary Synthesis,” or “post-synthetic developments.” As much as this was the editor’s original intention, many contributions collected here suggested to him that historiographical studies are currently moving beyond this more traditional outlook, pointing at other intellectual avenues. In order to acknowledge this historiographical shift and foster new thinking on these matters, the papers are organized in a sequence that highlights how the boundaries of the various research programs within evolutionary biology are apparently more porous

than often assumed. The papers can be meaningfully arranged into two main threads:

1. Part I: The view that sees Darwinism as either originally pluralistic or acquiring such a pluralism through modifications and borrowings over time.
2. Part II: The view blurring the boundaries between non-Darwinian and Darwinian traditions, either by holding that Darwinism itself was never quite as Darwinian as previously thought or that non-Darwinian traditions took on board some Darwinian components, when not fertilizing Darwinism directly.

Between a Darwinism reaching out to other research programs and non-Darwinian programs reaching out to Darwinism, the least that can be said is that this crisscrossing of intellectual threads blurs the historiographical field.

In Part I of this volume, Timothy Shanahan argues in “Selfish Genes and Lucky Breaks: Richard Dawkins’ and Stephen Jay Gould’s Divergent Darwinian Agendas” that Darwin’s Darwinism was polymorphic or pluralistic enough to legitimately accommodate future developments as divergent as those opposing Dawkins’s genetic reductionism and Gould’s holistic hierarchical thinking. In a similar vein, John Alcock’s “The Behavioral Sciences and Sociobiology: A Darwinian Approach” holds that Darwin’s strong adaptationist stance has been successfully maintained in the behavioral sciences but by applying it to new phenomena, this time involving both genetic entities and individual organisms (and excluding higher entities), as seen in scholars like N. Tinbergen, W. Hamilton, E. O. Wilson, and R. Dawkins, among others. Embracing the same historiographical view, but simultaneously allowing for an expansion of Darwinism, David Depew argues in his “Darwinism in the Twentieth Century: Productive Encounters with Saltation, Acquired Characteristics, and Development” that Darwinism continually and successfully met the challenges of evolutionary developmentalism, the inheritance of acquired characteristics, and saltationism by taking on board new explanatory components but within its own ways of doing things. This evolving and flexible Darwinian tradition is presented in Massimo Pigliucci’s “Darwinism after the Modern Synthesis” as having permitted the transition from the Evolutionary Synthesis to the Extended Evolutionary Synthesis—incorporating new phenomena, mechanisms, and concepts—yet without moving beyond the confines of the same paradigm. This view is also shared by Adam Van Arsdale in his “Human Evolution as a Theoretical Model for an Extended Evolutionary Synthesis,” who uses the case of human evolution to reflect upon the nature of this theoretical expansion when it comes to integrating unique features such as encephalization, as well as nongenetic and flexible behaviors.

In Part II of this volume, Richard Delisle holds in “From Charles Darwin to the Evolutionary Synthesis: Weak and Diffused Connections Only” that key Darwinian scholars (including Darwin himself) and some proponents of the Evolutionary Synthesis were also simultaneously committed to ideas that were not particularly Darwinian, making the boundary between Darwinian and non-Darwinian ideas porous. Indeed, Georgy Levit and Uwe Hossfeld argue in “Major Research Traditions in Twentieth-Century Evolutionary Biology: The Relations of Germany’s

Darwinism with Them” how evolutionary biology in German-speaking countries which centered around notions like “type,” “monism,” and “holism” variously integrated some Darwinian elements, especially as seen in E. Haeckel, L. Plate, and B. Rensch.

What used to be seen in the traditional historiography as past blind intellectual alleys are increasingly seen as possible early insights now in need of some sort of revival. In “Alternatives to Darwinism in the Early Twentieth Century,” Peter Bowler expands on how important Lamarckism, Orthogenesis, and Saltationism had been for evolutionism in the late nineteenth and early twentieth centuries, some of these ideas now being reconsidered. In a similar vein, Maurizio Esposito holds in “The Organismal Synthesis: Holistic Science and Developmental Evolution in the English-Speaking World, 1915–1954,” how a fairly robust tradition founded on the centrality of organismic biology persisted in the English-speaking world throughout the first half of the twentieth century—largely independently of what was perceived as a reductionistic and mechanistic neo-Darwinism—a tradition revived today in Evo-Devo under different guises. And precisely because these research programs overlap, one strain of the multifaceted, robust, and long-lasting Lamarckian movement in France paved the way for important innovations in molecular biology in the 1950s and 1960s, as argued in the “Lamarckian Research Programs in French Biology (1900–1970)” of Laurent Loison and Emily Herring. This situation erected a bridge between two movements usually opposed over the divide of “hard inheritance” (molecular biology) and “soft inheritance” (Lamarckism), Darwinism being traditionally associated more closely to the former than the latter. In “Molecularizing Evolutionary Biology,” Michel Morange further reflects upon the nature of the interrelationship between molecular biology and evolutionary biology, arguing that the former has insinuated itself ever more profoundly into evolutionary questions since the 1960s, to the point of significantly modifying the character of the so-called Modern Synthesis.

Whether or not the Darwinian/non-Darwinian divide is judged to have been more porous than often assumed, some research programs managed to grow without much contact with Darwinism, until recent bridges were established. In “Cells, Development, and Evolution: Teeth Studies at the Intersection of Fields,” Kate MacCord and Jane Maienschein offer an alternative to the narrative of a “gene-centered” evolutionary biology by recounting how development, evolution, and cells were brought together throughout the twentieth century. In a different case study, Ulrich Kutschera’s “Symbiogenesis and Cell Evolution: an Anti-Darwinian Research Agenda?” explains how the research program on the rise of more complex cells in the early history of life (the symbiogenesis theory) was for too long conducted from the viewpoint of an anti-Darwinian agenda.

Just as the first two contributions to this volume argued that Darwinism’s original pluralism was sufficient to explain a wide scope of evolutionary phenomena, so the volume closes with Derek Turner’s analysis in “Paleobiology’s Uneasy Relationship with the Darwinian Tradition: Stasis as Data” in which he holds that Darwinism today has been destabilized by what paleobiology brought to evolutionary studies since the 1970s.

Irrespective of how one understands the Darwinian tradition, most contributions to this volume show the extent to which the various research programs in evolutionary biology are deeply pluralistic, often being composed of many overlapping or semi-distinct intellectual strains, suggesting an overall picture of a tight and complex network of ideas across evolutionary biology.

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