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Book Review

The Philosophy of Biology. Edited by David L. Hull and Michael Ruse. Oxford University Press, 1998. 772 pages. Hardcover \$85, paperback \$24.95. ISBN 0-19-875212-1.

Sex and Death: An Introduction to the Philosophy of Biology. Kim Sterelny and Paul E. Griffiths. University of Chicago Press, 1999. 440 pages. Hardcover \$60, paperback \$22.00. ISBN 0-226-77304-3.

By now it has become a platitude that the philosophy of biology has come into its own. Over the past twenty-five years, since Hutchinson Publishing Group published Michael Ruse's *The Philosophy of Biology* (1973) and Prentice-Hall published David Hull's *Philosophy of Biological Science* (1974) in its Foundations of Philosophy series, the philosophy of biology has emerged as a flourishing field with its own journals, textbooks, conferences, and, at more and more schools, curricular course offerings (both graduate and undergraduate). No longer ignored or even overshadowed by issues and concerns of the philosophy of physics, the philosophy of biology has become a staple in driving the philosophy of science generally. Two recent very fine additions to the literature, one an anthology of papers and the other a sophisticated introductory monograph, chronicle much of the most recent work in the field.

Hull and Ruse's anthology contains thirty-six papers, focusing on ten topics. In addition, the editors provide a book introduction as well as short topic introductions. The topics range from standard issues that have been at the core of the philosophy of biology for the past couple of decades (such as adaptation, units of selection, function, species, altruism) to very recent concerns (developmental biology) to "extra-disciplinary" issues (human nature, the human genome project, progress, creationism). As the editors state in the book's introduction, many of the "classic" papers, already available in other anthologies, are not reproduced here. These other anthologies include Elliott Sober's *Conceptual Issues in Evolutionary Biology* (MIT Press) and Michael Ruse's *Philosophy of Biology* (Prometheus Press), as well as more specific-focused collections, such as Marc Eveshefsky's *The Units of Selection* (MIT Press) and Colin Allen et al.'s *Nature's Purposes* (MIT Press). Of the thirty-six papers collected by Hull and Ruse, only three originally appeared before 1990.

Part One (Adaptation), containing five essays, lays out the basic and ubiquitous aspect of adaptation for biologists as well as Gould and Vrba's well-known criticisms of what they call the "adaptationist programme," which they liken to just-so stories. While this has been a long-standing issue, recent work in developmental systems (represented in Part Two by two essays) has only recently caught the attention of philosophers. This issue, of understanding how phenotypic adaptation and genotypic causes only within the context of developmental processes, bears direct relevance to the preceding adaptationist papers and also to the issue of units of selection, particularly as a challenge to Richard Dawkins's claims of genic selectionism. This third section of the book (on units of selection) could have benefitted by

including an essay by Susan Oyama, laying out in more detail the developmental systems approach and its relevance to philosophical matters. This developmental approach, while bridging adaptation and units of selection, does not get reflected in the three papers dealing with units. Instead, zeroing in on the relationships between interactor hierarchies and replicator hierarchies, genic selectionism and group selectionism are represented (omitting the original Darwinian perspective of organism selectionism, most commonly now attributed to Gould).

As promised, this anthology does not reprint "classic" papers available elsewhere. This is probably most noticeable in Part Four (Function), where the two seminal essays by Larry Wright and Robert Cummins are absent. Instead, three essays take a more pluralist approach, addressing not so much what function is as why we should care. This pluralistic stance carries over to the issue of species (Part Five), where the debate of the 1980s on the issue of species as individuals is not at all highlighted by the three present papers. Rather, the emphasis is on systematics and classification and what work is done there by various conceptions of species.

The second half of this anthology reads almost as a different book. Far less technical, it deals more with concerns about biology and evolutionary theory than with concerns within them. For example, the five papers on human nature address biological essentialism and its connection to gender and sexuality. Similarly, essays on the human genome project address eugenics and politics, while three papers on creationism contain a (sophisticated and useful) debate between Ernan McMullin and Alvin Plantinga.

This is a fine anthology, and its sins are not those of commission, but of omission. What is missing - and missed - are not the classic papers, which are rightly not reprinted here. Rather, there are important, fecund areas within biology that are not present: issues related to ecology, population genetics, and extinction (including the on-going debates about mass extinctions).

Where the collection of Hull and Ruse does not do enough with these areas, Sterelny and Griffiths do more, devoting a full chapter to each. *Sex and Death* contains fifteen chapters, focusing on four general concerns book-ended by a two-chapter introduction and a one-chapter conclusion. Beginning with what the authors call the received view of evolution, Sterelny and Griffiths proceed to raise and critique various challenges and emanations to this received view, including challenges from the "micro" level (including genic selectionism, the developmental systems approach, advances in molecular biology, and reductionism in general) to the "macro" level (including the revival by David S. Wilson and Elliott Sober of taking group selectionism seriously). Self-consciously oriented for biology students and philosophy students, each unfamiliar with the other's discipline, this book presents detailed and difficult material in very accessible language, all the while maintaining helpful overviews. Each chapter includes useful and up-to-date suggested further readings.

Part One (Introduction) provides an excellent overview of the received view of evolutionary theory along with indicated recent challenges (which get fleshed out in the book's subsequent sections). Part Two (Genes, Molecules, and Organisms) details arguments for genic selectionism, as well as criticisms of it, including criticisms coming from developmental biology. There are also two chapters on molecular biology and reductionism. Covering many of the same topics as Hull and Ruse, the authors place these topics into a housing that interrelates them more naturally for novice students. Likewise, Part Three (Organism, Groups, and Species) places the topics of group selectionism, systematics, and the nature of species within the scaffolding of a set of responses to the received view. Part Four (Evolutionary Explanations) includes Sterelny and Griffiths's treatment of adaptation(ism) and function, while Part Five

(Evolution and Human Nature) focuses on sociobiological claims, including a chapter devoted to a case study of theories of emotion.

The virtues of this book abound. It is admirably even-handed in its treatment of views and arguments, though the authors frequently make it clear where their individual inclinations lie. It is thorough and does not at all shy away from conceptual complexity, while maintaining its focus as an introduction to the field. In tandem with the quite comprehensive selection of essays contained in the Hull and Ruse anthology, these two volumes provide a superb introduction (indeed, more than an introduction) to contemporary philosophy of biology.

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