

Alex Rosenberg and Robert Arp (eds): *Philosophy of Biology: An Anthology*

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It is useful to judge an anthology by the same criteria as we would use to judge a kit of building blocks: Does it contain pieces of sufficient quantity, variety and quality to build a wide range of interesting things? In the case of *Philosophy of Biology: An Anthology*, edited by Alex Rosenberg and Robert Arp, the answer is a clear but qualified yes. The anthology will be of service to teachers who are composing a syllabus in philosophy of biology, to students who are looking for some initial texts on key topics, or to anyone who is interested in an introduction to philosophy of biology's scope and recent history. However, some problems with the choice and editing of the reprinted texts detract from the volume's overall quality.

Rosenberg and Arp's anthology joins previous collections of reprinted texts such as Hull and Ruse (1998), Sober (2006) and Ruse (2007). Such collections have long served to define the debates, achievements and open questions of philosophy of biology—and of course to canonize suggested readings for beginning students. The present volume enjoys the advantage that one of its editors, Robert Arp, also recently co-edited a volume of newly commissioned essays in philosophy of biology. This is the excellent *Contemporary Debates in Philosophy of Biology* (also published in 2010 by Wiley-Blackwell), in which key topics are discussed in pro-and-contra-fashion. Like similar multi-author volumes of new essays—such as Hull and Ruse (2007), Sarkar and Plutynski (2010) or Ruse (2010)—*Contemporary Debates* is concerned less with the field's history and more with its present state of the art and its future development. Arp's two volumes together will be particularly useful, with the anthology in hand setting the scene for *Contemporary Debates*.

Each section of the anthology is prefaced by a concise and helpful introduction. These introductions give the reader a basic guiding framework for each debate, and they will be particularly useful to beginners. Somewhat less successful is the

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“General Introduction: A Short History of Philosophy of Biology”. On a mere ten pages, it tries to combine the basics of evolutionary biology, some history of evolutionary thought, and an overview of several decades of philosophy of biology. This cannot avoid feeling rushed, although it is undeniably clear and spirited.

The anthology works best when its sections are constructed, roughly, on the principle of a tripod: three texts with either antithetical, complementary or synthetic roles. For example, the section on the units of selection debate begins with two classical texts: “Artifact, Cause and Genic Selection” (by Elliott Sober and Richard Lewontin) and “The Return of the Gene” (by Kim Sterelny and Philip Kitcher). It concludes with Samir Okasha’s “The Levels of Selection Debate: Philosophical Issues”, which both refers back to the classical texts and moves forward into the contemporary debates. Students or teachers looking for the cornerstones of the debate will be well served by this choice of texts. Several other sections of the anthology follow similarly useful patterns, for example the sections on “Evolution and Chance”, “Biological Function and Teleology”, “Sociobiology and Ethics” and “Design and Creationism”.

Other sections are made up of only two texts, and these (with apologies for overtaxing the tripod metaphor) tend to be more wobbly. The choice of Gould and Lewontin’s “Spandrels” paper along with Ernst Mayr’s “How to Carry Out the Adaptationist Program?” is certainly an engaging and classical point of departure for the section on adaptationism. Yet these two papers on their own give the reader few clues as to the philosophical debate on adaptationism of the past three decades (Mayr’s text is from 1983). The addition of a more recent text would enhance the section considerably. Perhaps the section on evo-devo is in some sense the modern continuation of the adaptationism debate. Yet here the editors have chosen texts from scientific journals, and these do not fully engage with the philosophical issues—neither with those of the adaptationism debate nor with the more recent debates concerning the status of evo-devo. Most readers will thus wish to turn to other anthologies to complement the sections on adaptationism and evo-devo.

There are other similarly uneven sections in the anthology. The selections on reductionism are Philip Kitcher’s classical “1953 and All That: A Tale of Two Sciences” and Elliott Sober’s “The Multiple Realizability Argument Against Reductionism”. While both are worthy choices, Sober’s text does not engage with Kitcher’s sufficiently for the two to form a cohesive and satisfying whole. What is missing is the third leg of the tripod: Kitcher’s anti-reductionism and Sober’s more pluralistic view should be balanced by a critique of anti-reductionism. This is in fact the construction chosen in Sober’s recent “Conceptual Issues in Evolutionary Biology” (2006), where the same texts on reductionism by Kitcher and Sober are joined with a text by C. Kenneth Waters attacking the anti-reductionist consensus. Similarly, the section on evolutionary psychology lacks a critical leg and so gives an unbalanced view of the philosophical debate. The natural remedy in both cases is again to turn to earlier anthologies or to the *Contemporary Debates* volume for additional points of view.

A more serious missed opportunity is that some areas of recent interest in the philosophy of biology are not represented in the anthology at all. In the past decade, philosophers of biology have branched out with renewed vigor into a number of

areas outside the classical concerns with evolutionary biology. As we are looking more closely at predominantly experimental disciplines such as molecular biology, we are discussing important but long neglected questions: What is the nature of theories in molecular biology? How are such theories confirmed by experiments? What is the epistemic function of model organisms? Can anything short of fully mechanistic knowledge serve for the purpose of explanation? These exciting new currents have certainly left their mark on present-day philosophy of biology, and it would be welcome for this to be reflected in future anthologies.

A handful of rather prosaic but in the aggregate still serious complaints concern the editing of the selections in the anthology. In resetting the texts in the anthology's style, key figures were often omitted—and these omissions are not indicated in the text. Perhaps the most problematic case is Gould and Lewontin's "Spandrels" paper, which in its original form relies on photographs to introduce its key architectural metaphor (Gould and Lewontin 1979). Readers of the present anthology, however, never get to see any spandrels at all, nor are they made aware of the omission! This limits the reprint's usefulness, since especially beginning students will find the concepts much harder to grasp without the illustrations. One can, of course, easily search the internet for the spandrels of San Marco—but then one might as well download the original paper for free from the publisher. Or one might again turn to Sober's earlier "Conceptual Issues", in which the "Spandrels" paper is faithfully reprinted. It is certainly not a problem that newer anthologies reprint texts already used in earlier ones. Indeed, it would be a strangely cacophonous discipline that lacked such standard texts. But in this case, as in the case of the reductionism debate, the newer volume neither adds to nor even equals the earlier volume.

The problem of omitted figures plagues other selections as well, especially those from journals in the natural sciences—see the contributions on evo-devo from *Cell* (Carroll 2006) and *Trends in Ecology and Evolution* (Breuker et al. 2006).

A further unhappy choice is that abstracts were silently incorporated into the main text of papers. The abstracts are printed in the same style as the rest of the text and appear sometimes immediately before an article's introduction (as in the case of the "Spandrels" paper) and sometimes as the first paragraphs of the introduction (see for example John Beatty's "Chance and Natural Selection"). Such alterations are not true to the intended flow and structure of the texts.

These editorial problems are far from universal: line figures and some other illustrations are usually included in the reset text, and the use of abstracts as part of the main text is rarely confusing. Nevertheless, I suspect that many readers will react as I did: After being puzzled by some anomalies, they will start to distrust the anthology and will either stop using it altogether or turn to the original texts. But at that point the anthology is reduced to a mere "suggested readings" list, and it cannot afford this in an age of tablet computers and PDFs.

In summary, *Philosophy of Biology: An Anthology* offers a rich choice of texts for anyone teaching or studying the philosophy of biology. Many sections can stand on their own as introductions to the key questions in the field. Some sections—such as those on adaptationism or reductionism—are less balanced, but these can be complemented with texts from earlier anthologies. A strategic shortcoming is that

the anthology largely restricts itself to the classical philosophy of *evolutionary* biology, even though the field is now exploring many other exciting areas as well. Moreover, a number of technical infelicities such as the omission of key figures from the reprinted texts are distracting and regrettable. Nevertheless, this new anthology is a useful addition to the existing collection of building blocks from which introductory courses in philosophy of biology are constructed.

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