

Uller, Tobias and Laland, Kevin N., editors. *Evolutionary Causation: Biological and Philosophical Reflections*. Cambridge, MA: The MIT Press. 2019. vii + 352pp., illus., bibliography, index. \$60.00.

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This book is an impressive achievement. Recognizing that a scope as broad as “evolutionary causation” should require genuine collaboration between evolutionary biologists and philosophers of science, the editors have brought together fifteen contributions spanning the gamut from what we might call “pure” philosophy of science to “pure” biological works. Of course, it is well known that producing genuine, transformational interdisciplinarity work – work, that is, where scholars from multiple disciplines come together not just to talk at one another, but rather to think in ways that transcend their traditional disciplinary ways of working – is an extremely difficult task.

This is made all the more challenging in this case by the fact that “evolutionary causation” itself has two profoundly different meanings for each field. For biologists, this phrase calls to mind concerns about enumerating the various kinds of processes that might impinge on organisms over evolutionary time. Given the volume’s connection to the project of the “extended evolutionary synthesis,” this takes the shape here of considering the roles and scope of processes like evo-devo, niche construction, phenotypic plasticity, and so forth. For philosophers, on the other hand, a natural move is to consult general theories of causation (one of the oldest topics in the discipline), and apply them to various parts of the evolutionary process. The book is at its best when its authors are recognizing – even trading on – this ambiguity. The contributions of Helanterä and Uller, of Watson and Thies (on the biological side), and of Chiu and of Stotz (on the philosophical side) are particularly noteworthy in this regard. These chapters weave together promising contemporary philosophical work with extensive empirical and theoretical support, producing in the process wholes that are greater than the sum of their parts.

As already mentioned, this book forms part of the broader cluster of recent work on the “extended evolutionary synthesis.” As such, it is delightfully expansive, covering a huge amount of biological and philosophical phenomena of interest. Topics as diverse as the modeling of directed mutation and the continued utility of Ernst Mayr’s distinction between proximate and ultimate causes all fall within the book’s remit. It thus forms an enjoyable, if somewhat polemical, survey of a wide variety of current trends in empirical, theoretical, and philosophical approaches to the process of evolution. In short, I strongly recommend it for anyone interested in either the biological or the philosophical formulation of the problem of evolutionary causation.

Last, it is appropriate to pause here to mourn the recent loss of Karola Stotz. Her outstanding contribution to this volume indicates precisely why she will be so keenly missed.

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