

ARISTOTLE AND BIOLOGY

PELLEGRIN (P.) *Animals in the World. Five Essays on Aristotle's Biology*. Translated by Anthony Preus. Pp. vi + 324. Albany, NY: State University of New York Press, 2023. Cased, US\$95. ISBN: 978-1-4384-9147-9.

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Reading P.'s insightful and wide-ranging essays deepened my appreciation for Aristotle's meticulous approach to studying nature. The book (published concomitantly with the CNRS French edition) addresses one overarching question that has shaped P.'s contributions to the *biological turn* in Aristotle studies: in what sense does Aristotle fulfil the role of a true biologist? P. intends to write for both Aristotle specialists and non-specialist philosophers (p. 3), although, in my opinion, it is more accurate to say that *some parts* of the book appeal to specialists, while *others* are more accessible to non-specialists. For the denser parts, readers unfamiliar with Aristotle's zoological corpus will need to make a sustained effort to follow some of the complex arguments.

The first essay, 'Is There an Aristotelian Biology?', opens with P. questioning whether it is 'absolutely anachronistic' to consider Aristotle a biologist (p. 7) and concludes with him saying that it is not (p. 15). P. discusses the relationship and influence of Aristotle on modern biologists, such as Carl Linnaeus, Jean-Baptiste Lamarck, Georges Cuvier, Charles Darwin and Colin Pittendrigh. For example, P. relates Aristotle to Darwin through the concept of adaptation, describing their relationship as one of 'isomorphism' (p. 9), and argues that Darwin's discussion of advantageous characteristics introduces a version of final causes congenial to Aristotle's. When comparing Aristotle to Cuvier, P. asserts that their connection is even stronger than mere isomorphism (p. 11). He draws parallels between them in classifying living beings according to their functions and ranking fundamental functions, such as the nervous system, against more superficial ones, such as circulation and respiration (p. 22). He also stresses that both emphasise 'the necessity of observation in the natural sciences' (p. 42) and that what Cuvier calls 'theory' is essentially Aristotle's 'final cause' under a different name (p. 43).

P.'s ability to bridge ancient observations with modern scientific thought is particularly impressive. His underlying argument suggests that, because Aristotle shares many similarities with modern biologists, he should be considered a biologist himself. This reasoning becomes especially clear when P. later claims that 'Aristotle profoundly resembles' Cuvier – rather than the other way around (p. 182). However, Aristotle is a biologist *in his own right*, without *needing* to be viewed as a predecessor to modern biologists. His extensive studies on living organisms, their classifications, behaviours and physiological processes demonstrate a rigorous and methodical approach to understanding the natural world. Aristotle's biological works, such as *Historia animalium* and *De partibus animalium*, showcase his empirical observations and the systematic nature of his inquiries. These contributions establish his role as a biologist based on his own methods and findings, independent of how they influenced later scientific developments, resemble practices by later biologists or are the first stepping stone to modern biology.

The second essay, 'The New Horizon of Teleology', focuses on teleology within Aristotle's biological framework, while also dedicating substantial attention to the role of necessity. P. characterises Aristotle's rejection of the mechanistic perspective as 'a critique of a critique, a negation of a negation' (p. 58), which implies that Aristotle rejects the mechanistic account that rejects the divine providence account, but he does so while

acknowledging the progress that was being made by the mechanistic account. More specifically, P. uses the distinction in *PA* 1.1 between formal nature and material nature to suggest that the teleology inherent in a species, driven towards its ultimate goals, must navigate the complexities of its material characteristics to ensure a sustainable advantage. As a more critical aside, this discussion would have benefited in its discussion of the interplay between material and formal nature, and teleology and material necessity, from taking into account more recent scholarship on this topic by, for instance, J. Gelber, D. Henry, J. Lennox and M. Leunissen. However, the reference section for this book, in general, is relatively short and eclectic.

In the third essay, 'A Philosophy of Life?', P. discusses Aristotle's exploration of the transition from non-living to autonomous living entities. This chapter is among the more technical in the volume. Focusing on Aristotle's discussion of *homoiomeries* and *anhomoiomeries* as the fundamental components of living organisms, P. concludes that living beings are invariably composed of entirely anhomoiomerous parts, albeit mixed in specific proportions (p. 115). Also, the material of the embryo produced by the female, to which the male semen imparts the species' form through motion and heat, must be understood as living rather than non-living matter (p. 138). While a living being is required to generate life, material causality is essential *in all cases*. It is the organised, formed matter, inherently capable of life, that becomes animated. According to P.'s Aristotle, life is not an anomaly within the laws of matter, which it utilises; instead, purely mechanistic processes are seen as *imperfect* imitations of life.

The fourth essay, 'Diversity', commences with an examination of a passage from *HA* 1.1, wherein Aristotle delineates four categories of animal differentiation: their modes of existence, behaviours, characteristics and anatomical structures. Interestingly, P., speaking on Aristotle's behalf, posits that 'animals *should* inhabit all regions of the world' (p. 216), which refers to the claim that all four elements must have their own animals assigned to them, and so there must be animals on the moon too, portraying Aristotle's biological world view as teeming with life and highlighting the symbiotic rapport between animals and their habitats. Contrary to the notion of an Aristotelian *scala naturae* – a hierarchical scale of beings based on perfection – P. challenges this concept by underscoring the explanatory significance of intricate organisms within Aristotle's framework, where animal species possess perfection through their ability to perpetuate themselves indefinitely through survival and reproduction. P. then shifts back to discussing Cuvier, emphasising that the diversity of life forms is a matter of observation and has no inherent final purpose: 'Aristotle observes the existence and the diversity of animals, he does not deduce it' (p. 225).

The final essay, 'Animal Nature and Human Nature', addresses whether and to what degree Aristotelian zoology is anthropocentric, and argues that, ultimately, it is less anthropocentric than one might assume. While the superior perfection of the human species is undeniable, Aristotle does not use humans as a universal explanatory model, nor does he suggest that other forms of life should imitate humans. Moreover, he does not posit humans as the pinnacle of an unbroken, continuous scale of beings. Instead, Aristotle recognises the distinctiveness and intrinsic value of each species within its own right and ecological context. This essay is perhaps the most interesting in the collection, as it effectively challenges the notion of an anthropocentric hierarchy in Aristotle's zoology. It underscores Aristotle's appreciation for the complexity and uniqueness of each species, highlighting his more inclusive view of the natural world.

The book not only deepens our understanding of Aristotle's biological theories but also effectively underscores the enduring relevance of his work in contemporary biological and philosophical discussions. Its main shortcoming is the book's limited engagement with

current literature, which makes it challenging to thoroughly contextualise the essays within the broader body of research, and which makes it less useful for novices entering the field of Aristotle's biology. P. addresses this potential worry in the introduction, stating that he is 'not particularly interested in engaging in specialist disputes', but rather aims to 'situate these questions' (p. 3). P. also suggests that perhaps what he is doing is following the French tradition of the history of philosophy, with the primary goal of comprehending the topics; so perhaps what we should expect to get is *his* take on these important texts and questions. While this approach may leave some readers wishing for more comprehensive scholarly dialogue, it does to some extent allow us to appreciate the author's intention and focus on the broader implications and insights of Aristotle's work. Thus, we might as well embrace P.'s purpose and appreciate the book for its accessible and thought-provoking examination of Aristotelian biology.

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