

Book Review

Pierre Pellegrin: *Animals in the World: Five Essays on Aristotle's Biology*. Trans. Anthony Preus. (Albany, NY: SUNY Press, 2023. Pp. vi, 324.)

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Aristotle's inquiries into the anatomy, physiology, generation, and classification of animals comprise about a quarter of his extant works. For the past fifty years, an expanding body of scholarly literature has examined how Aristotle's theories of animal life relate to his broader philosophical vision. Pierre Pellegrin, one of the pioneers of the "biological turn" in Aristotle studies, reflects here on five fundamental questions in this area. Were Aristotle's investigations really "biological"? What does his teleological view of nature amount to? What distinguishes living from nonliving things? Is there a unified ordering to the animal world as a whole? And what place does the human animal occupy in that ordering?

To the titular question of chapter 1 ("Is there an Aristotelian Biology?") Pellegrin answers that Aristotle is a "real" biologist, despite the errors of his theories and the metaphysical baggage they carry. Pellegrin establishes parallels between Aristotle's approach to the study of animals and that of nineteenth-century French zoologist and paleontologist Georges Cuvier (one of Darwin's "two gods"). Michel Foucault suggested that Cuvier's novelty consisted in his organizing the diversity of animal life against a background of functional identity in their organic structures and parts. Where Foucault saw Cuvier as a break from "Classical" understandings of animals, Pellegrin shows that in fact Aristotle views the animal world as interwoven with functional identity in just the same way. Biological parts that are not "the same in form" can nevertheless be the "same according to analogy": what the scale is for fish, the feather is for birds. Aristotle thus represents for Pellegrin an exception to Bachelardian or Kuhnian accounts of the history of science, according to which ancient and modern scientific theories are separated by "epistemological breaks" or "paradigm shifts."

In the second essay ("The New Horizon of Teleology") Pellegrin explicates Aristotle's teleology against the backdrop of his predecessor's views of nature. "Mythic" or "naïve" teleology (of the *Timaeus*-style) explained the emergence of the natural world from a state of precosmic disorder via the mindful intervention of gods. Presocratic (and particularly Democritean) "mechanism" rejected this recourse to divine intention, arguing that the world and its apparent order are generated by blind Necessity—the play of physical, material forces alone. Aristotle's novelty against all his predecessors is

his total rejection of narrative cosmogony: the universe is not generated but is eternal, and has more or less always been as it is now. Aristotle's teleology is meant to explain how such permanence is possible in the animal world: how each species's unique bodily structure and biological functions enable it to survive and successfully pass on its form in perpetuity. Nevertheless, Aristotle rehabilitates Necessity and incorporates it into his own teleological vision. First there is the top-down "hypothetical necessity," where form dictates what kind of bodily material must be present to perform a certain biological function. But there is also the bottom-up necessitation of "material nature" or "necessary nature," where formal structure is itself determined by material constraints. For example, the production of large antlers leaves stags insufficient earthy material to produce enough teeth, which in turn requires they possess multiple stomachs for sufficient digestion (*Parts of Animals* III. 2).

What ultimately differentiates such life from inert matter, though? For his third reflection ("A Philosophy of Life?") Pellegrin explores that difference through careful examination of the modes of generation for natural bodies: the sexual reproduction and "spontaneous generation" of animate bodies vs. the formation of inanimate minerals, metals, and other such composites. In sexual reproduction it is the father's nutritive soul which imbues the mother's reproductive material with the incipient animal's form. Yet life can also arise spontaneously from inanimate matter under the right material conditions, such as from a decaying corpse or a fetid pond. Here it is actually those material conditions themselves that grant the form in absence of a preexisting soul: oysters are born from slimy mud, conches from sandy mud (*History of Animals* V. 15). There is thus a fundamental similarity between spontaneous generation and the generation of inanimate natural bodies such as metals, where it is the different material conditions of heat, pressure, and location within the earth that determine whether copper or gold is generated, say. Nevertheless, there is an unbridgeable gap between the animate and inanimate. There must be some "vital reality" which precedes the generation of any new life (the notoriously enigmatic *pneuma*) while metals are produced "in modern terms, as a chemical reaction" (169).

Yet Aristotle was skeptical of attempts to reduce the spectacular multiplicity of the natural world to a single logical ordering or conceptual schema. Difference trumps unity in Aristotle's zoology. The argument of Pellegrin's fourth essay ("Diversity") is largely negative, showing how Aristotle's apparent gestures toward the continuity and completeness of the animal world are easily misinterpretable. On the Platonic view (again from *Timaeus*) the plurality of animal life reflects the completeness of an ideal form of life (the intelligible "Animal" or "Living Thing") upon which the cosmos is modeled (30c ff.). Thus, a rationally structured universe *must* contain emperor penguins. For Pellegrin's Aristotle, by contrast, there simply is no such "global rational structure" (231) to the animal world: "Aristotle *observes* the existence and the diversity of animals, he does not *deduce* it" (225). The perfection and rationality of nature exist on the level of the specific rather

than the general. Those features are to be found within the functionally adapted bodily structure of each species of animal, not within the cosmic ordering of a *scala naturae*.

Amongst that great manifold of Aristotelian life, however, one animal clearly holds an exalted place: the human being. In his fifth and final essay (“Animal Nature and Human Nature”), Pellegrin asks whether human nature provides the model on which Aristotle understands the natures of other, inferior animals. While the capacity of intellect makes human beings “globally superior” (238) to non-human animals, humanity is not thereby the anchor point of Aristotle’s zoology. A comparative physiology of perception provides Pellegrin an alternative vision of the human–animal divide: it is not just intellect which differentiates them, for perception itself and the pleasures it affords are transformed by the presence of *logos*. A brief but fascinating reflection on the teleology of human–animal relations concludes the chapter. Pellegrin rejects anthropocentric interpretations of Aristotle’s teleology—nevertheless, certain animals can only exist symbiotically with human art. Sheep, for example, are so naturally stupid that the perpetual existence of their species is inexorably tied to the care of human shepherds (*History of Animals* IX. 3). The domestication of sheep is thus simultaneously artificial and natural.

If there is a singular theme which unites all these reflections, it is the idea that Aristotle’s living world is interlinked “by analogy” (*kat’ analogian*): the sameness of biological function across disparate bodily structures and the ways of life they support. Aristotle’s recognition that such distinctions belie a deeper similarity constitutes a “genuine” biological thought, perhaps the first in history. Yet Pellegrin also resists the image of Aristotle as a thinker of holistic completion. There is no explaining the diversity of life: no totalizing view, no rationalizing narrative, no *scala naturae* that could organize all that wild variety into a unified and ordered whole. For Pellegrin, this attentiveness to how observable difference can outstrip rational explanation is just as much a hallmark of Aristotle’s biological project as is essentialism, teleology, or hylomorphic metaphysics. Hence Pellegrin’s concluding example: female bears are more courageous than male bears (*History of Animals* IX. 1). This should not be so—animal courage correlates with the hotness of the blood, says Aristotle, and his theory of sexual difference requires that female nature is colder across the board. Yet the bare fact of female ursine courage remains, for those who are willing to observe it. As Aristotle was, in spite of his own theoretical commitments.

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