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978-0-521-76844-3 - Being, Nature, and Life in Aristotle: Essays in Honor of Allan Gotthelf

Edited by James G. Lennox and Robert Bolton

Excerpt

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Introduction

The chapters of this volume represent some of the most promising results of current advanced research on a number of related themes in the thought of Aristotle, and in so doing aim to honor the many and varied contributions of Allan Gotthelf to Aristotelian studies. These two aims are not accidentally connected. Perhaps no one has done more in recent decades to promote, to sponsor, to organize, and to stimulate research on these topics in Aristotle's thought than Allan Gotthelf. The explorations and ideas on display here all reflect and, to a significant degree, derive from his efforts. As such, they constitute a fitting token of esteem from his friends and colleagues. As he would be the first to agree, nothing could be more suitable, as a way of honoring him and his accomplishments, than to further advance our understanding of Aristotle.

Many of the essays in this collection were first presented at a gathering held at the University of Pittsburgh on October 1–3, 2004 under the rubric: "Being, Nature, and Life: A Conference Celebrating Allan Gotthelf's Contributions to the Study of Classical Philosophy and Science." Others are contributed by scholars who were unable to attend. The main themes here are those of the conference: Aristotle's metaphysics, his natural science and biology, and his methodology. All of these studies exhibit, to a greater or lesser extent, the interconnections among these topics in Aristotle's own thinking.

To appreciate the significance of these studies, and their place in recent and continuing work on Aristotle, it will be useful to refer back to an earlier collection, conceived and edited by Gotthelf himself jointly with one of the current editors, advice from the other, and contributions from both. That collection, *Philosophical Issues in Aristotle's Biology* (Cambridge, 1987), brought new attention to, and displayed the importance of, the material found in Aristotle's biological works for our understanding of his doctrines in the same central areas of his thought mainly in focus here – his philosophical and scientific method, his natural philosophy with its

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[More information](#)

teleological focus, and his metaphysics. That collection itself was preceded by an initial conference dealing largely with these same topics, primarily organized and directed by Allan Gotthelf, which was held in Williamstown, Massachusetts in the summer of 1983, a conference in which many of the current contributors participated. Subsequent collections, deriving from later conferences in whose organization Allan Gotthelf again played a leading role, drew on this earlier work and further advanced the discussion of these and related themes.¹

While the authors of the current studies have not intentionally looked back to the material in that original collection or its successors, these essays do belong in numerous ways to a still continuing stream of research which in no small part stems from those earlier endeavors. Indeed, as we have noted, in most of these studies attention is given to more than one of the three main areas of Aristotle's thought investigated in the original collection. This can be seen at once in the opening chapter, by David Sedley, which serves to introduce a major overarching theme linking all of the essays in this volume: Aristotle's natural teleology. Sedley's study draws not only on Aristotle's natural science proper but also on features of Aristotle's scientific method, concerning particularly his views on causal explanation, and also on special material from Aristotle's metaphysics. It is the perceived cross-fertilization in Aristotle's investigation of these different areas, against the background of Plato's reflections on the same themes, that leads Sedley to his main results.

In a similar vein, Robert Bolton's chapter on the relation between Aristotle's biology and his metaphysics uses material both from the *Analytics* and the *Metaphysics* to delineate the boundary line which Aristotle fixes between metaphysics and biology, and it investigates the implications of this for central doctrines in both areas of his thought. In a group of related studies James Lennox, Alan Code, and Mary Louise Gill pay special attention to a distinctive methodological device that plays an important role not only in Aristotle's procedures of inquiry in natural science but also in metaphysics – his method of definition by division. Lennox argues for a narrative unity behind the structure of *On the Parts of Animals* 1 and identifies a primary role for the method of division in the early stages of inquiry in natural science, prior to the search for causes. Code reaches a similar result mainly through an independent comparative study of material in the *Posterior Analytics* and *Metaphysics* concerning Aristotle's theory of definition. Gill argues for another distinctive role for the method of

¹ See Devereux and Pellegrin 1990; and Kullmann and Föllinger 1997.

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Excerpt

[More information](#)*Introduction*

3

division in Aristotle's treatment of a special problem in metaphysics, the unity of substance. A comparison of her study with those of Lennox and Code points to a common interest on Aristotle's part in the use of division both in natural science and in metaphysics in order to fix on proper kinds and proper data for study. So in this group of chapters Aristotle's interests in method can again be seen to mesh closely with his scientific concerns, both in biology and metaphysics. Pierre Pellegrin also explores Aristotle's theory of definition, by way of a close investigation of book 2 of the *Posterior Analytics*. His focus is on Aristotle's account of how ultimate causal definitions, and demonstrative explanations based on them, are reached in science.

Aryeh Kosman, David Charles, and Sarah Broadie offer a further group of connected chapters, in which detailed attention is given to a main feature of Aristotle's metaphysics, namely his fundamental, and closely connected, distinctions between form and matter and between actuality and potentiality, as these figure both in his biology and in his metaphysics. Kosman's chapter explores particularly, in this connection, the relation between formal and efficient causes in Aristotle's account of biological generation, while those of Charles and Broadie explore the relationship between actuality (or activity), potentiality and teleology in the context of *Metaphysics* Θ.

In a final, complementary chapter John Cooper explores the topic of Aristotle's teleology in Aristotle's ethics and political philosophy, reminding us that this motif not only figures prominently in Aristotle's science and philosophy of science but also in his approach to the question of the highest good for human beings. Cooper's study reveals how strongly the uses of teleology in natural and metaphysical science – uses displayed in nearly all of the earlier essays – are echoed in Aristotle's account of distinctively human life and human good.

As will be apparent, we have not thought it appropriate to try to summarize in any detail here the contents of the particular essays included below. Each makes highly distinctive and carefully argued claims whose intricacies invite and mandate close study by the reader. We have rather tried to indicate how, taken together, these chapters form a certain whole. A careful reader will in fact discern many more interconnections among these essays than we have tried to describe here.

Seen, then, from the perspective of the tradition of scholarship to which these studies belong, this collection is more than the sum of its parts. It advances a certain multi-faceted common research project in which all of the contributors have been engaged for more than twenty-five years

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[More information](#)

now, under early and continuing stimulus from Allan Gotthelf, a project whose underlying assumption is that Aristotle's philosophical and scientific method, his natural science and biology, his metaphysics, and his moral and political theory too, need to be studied together if any one of these areas of his thought is to be fully understood.

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Excerpt

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CHAPTER I

*Teleology, Aristotelian and Platonic**David Sedley*

GOD AS PARADIGM

Aristotle was Plato's student for two decades before founding his own school. Is it more fruitful to think of his mature work as anti-Platonist, or as that of an independent Platonist? Although this age-old question does not admit of final resolution, I am convinced with regard to my present topic, the explanation of purposive structures in the world,¹ that most can be learnt by emphasizing, rather than minimizing, Aristotle's Platonic background and training.²

Plato, like nearly every other thinker in and well after antiquity, associated teleology with conscious purpose. To make the world a purposive structure just is to posit an intelligent mind as its cause. True, the intelligent mind could have created the world and then left it to run itself mechanically, but no ancient thinker – after at any rate Anaxagoras, whose position on the point is open to dispute – was ready to contemplate a split-level theory of that kind. Either the world was intelligently created and is intelligently run, or it originated from non-intelligent causes and is still, with the possible exception of human action, governed by causes of that same kind. While the atomists defended the latter view, Plato developed the former:

This chapter is based on material from my book *Creationism and its Critics in Antiquity* (Sedley 2007), and I am grateful to the University of California Press for permission to reuse it here. In working on the topic, I have received help from people too numerous to list in this note, although they are listed, as exhaustively as I can manage, in the book's preface. In addition, Errol Katayama and Larry Jost have been kind enough to supply criticisms of the book that have prompted me to make some changes to the current version. Let me finally say what it pleases me to be able to dedicate the chapter to my friend Allan Gotthelf, whose work on Aristotelian teleology has been truly seminal.

¹ I must here leave untouched many of the major issues in Aristotle's teleology, on which see esp. Gotthelf 1997c.

² Gerson 2005, provocatively entitled *Aristotle and Other Platonists*, should be consulted for a much more ambitious, and more Neoplatonic, assimilation of the two than I have contemplated, including chapter 4 on issues relating to causation.

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[More information](#)

his Demiurge, who created the world, has left it under the overall control of the intelligent and divine world-soul.³

In conformity to this background, Aristotle too treats the twin issues of creation and administration in strict parallel to each other. The world, along with its resident species, is not the product of an intelligent act of creation, for the simple reason that it had no beginning at all but has always existed – a thesis he defends by appeal to the essential eternity of the heaven's circular motion. And likewise when it comes to the world's continued functioning, there is no divine oversight, planning or enforcement.⁴ So far he may seem to tend closer to the atomist camp, since no divine interest in our world is invoked at any stage. But like Plato, and unlike the atomists, he nevertheless holds that throughout the natural world there are irreducibly purposive structures. Pretty well everything in nature has a purpose, despite the fact that no intelligence either conceived that purpose or administers it.

This restrained teleology has won Aristotle innumerable admirers. For, it is rightly said, purposive structures are indeed basic to nature, quite regardless of the question of divine control or its absence. Never mind whether you are a creationist or the most hardened of Darwinians: you cannot avoid saying that the heart is for pumping blood, the eyelid for protecting the eye, the teeth for cutting and grinding food. Nor, for the Darwinian, are these locutions just a shorthand for some more accurate mode of biological explanation: adequate non-teleological explanations of the parts of the eye are simply not available.

Now, it is one thing to commend Aristotle for the refreshing modernity of his teleological thinking, and to contrast it with the antiquated creationism of a Plato. It is quite another thing to suppose that the outlook's appearance of modernity is the key to Aristotle's own rationale in developing the theory in this particular way. Ancient atomism likewise resulted in a great many modern-looking theses, yet it started from premises utterly unlike those of modern or even early modern physics. Similarly, or so I shall argue, Aristotle's minimalist approach to purpose in nature is very far from being a sign of his modernity. Such a recognition should not, however, lessen our appreciation of the light that his ideas can be used to shed.

Where did the motivation for Aristotle's revised teleology come from? From an unexpected quarter, it seems. Plato had famously conceded in

³ It is admittedly hard to establish how much more the Platonic world-soul governs than the celestial rotations. But *Ti.* 37a4–c5 (on which cf. Reydam-Schils 1997) makes it clear that it has true 'opinions' (δόξαι) about the sensible world of becoming and hence does not concentrate its thought exclusively on pure being.

⁴ True, Aristotle does occasionally talk as if god can be credited with some providential action, e.g. *GC* 2.10.336b27–34, but I join the consensus that regards such locutions as merely figurative (see esp. Solmsen 1963, pp. 485–95, but cf. Bodéüs 2000 for a less dismissive reading).

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Excerpt

[More information](#)*Teleology, Aristotelian and Platonic*

7

book 7 of the *Republic* that, for a philosopher, government ranks second best to the life of pure contemplation. And correspondingly in the *Timaeus*, where he maintains that the entire world has been so structured as to enable the rational human soul to imitate the divine mind through the study of astronomy and philosophy, this imitation of god is located in pure mathematical and philosophical contemplation, rather than in the exercise of moral or political virtues.⁵ Yet the divine creator and divine world-soul of Plato's *Timaeus* are themselves viewed as partly engaged in world-management. If so, they are not, even on Plato's own view, exclusively engaged in the best activity available to them.

Aristotle is in this regard more Platonist than Plato himself. He too (*EN* 10.7–8) holds that the kind of happiness that can come from leading a virtuous civic life, although of great value, is second-best to the godlike happiness of pure detached contemplation. But he improves on Plato to the extent that he seeks to make his own theology consistent with that same ranking of different brands of happiness. God's activity can only be the best, he argues in *Metaphysics* Λ, and, if so, it must be pure contemplation.⁶

The effect of this minor-looking adjustment to Platonism is breathtakingly far-reaching. If god must be a pure contemplator, he cannot be an administrator.⁷ There can therefore be no Demiurge, and no divine world-soul. In which case, the world is uncreated and functions without divine oversight. The outcome is, in short, Aristotle's cosmology.

In positing a detached and self-absorbed god, one who is above any inclination to intervene in our world, Aristotle sounds surprisingly similar to Epicurus. Yet unlike Epicurus he fully shares with Plato the conviction that god is the supreme explanatory principle. And he reconciles these two apparently conflicting motifs – god as detached and god as causally supreme – by drawing on another Platonic idea: that god is the supreme object of emulation. The goal of life, as Plato's followers expressed his idea, is 'to become as like god as possible'.⁸ Plato meant this goal mainly as a human aspiration, although in two contexts (*Smp.* 207c9–208b6; *Lg.* 4.721b6–c8) he extended it to the entire animal kingdom by presenting the drive to propagate as mortal organisms' best shot at achieving

⁵ I defend this interpretation of the *Timaeus* in Sedley 2000a.

⁶ It is entirely possible that this complete insulation of god from practical activity took time to evolve and is not yet fully worked out in the *On the Heavens*, although even there note, for example, 2.12.292a22–8 on god as free from *praxis*.

⁷ For an especially forthright development of this theology on Aristotle's behalf, cf. the passages of Alexander of Aphrodisias cited and discussed by Sharples 2003.

⁸ Annas 1999 chapter 3; Sedley 2000a.

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Excerpt

[More information](#)

immortality – surrogate immortality, that is, achieved by living on through their descendants – and the perpetuity of their species. Aristotle takes up this latter cue and develops the idea still further. The supreme divinity is an unmoved mover, a detached self-contemplator, whose activity is pure actuality, and *everything* else in the world functions by striving, in its own way, to emulate that actuality.⁹

The highest human aspiration, philosophical contemplation, is the most direct imitation of god's own activity (*EN* 10.7.1177b26–1178a8; 10.8.1178b7–32). Procreation, in humans, lower animals and plants is, as it had been for Plato, a bid for immortality by proxy, another way of imitating god's eternal actuality, namely by perpetuating both one-self and one's species (*de An.* 2.4.415a26–b7; *Pol.* 1.2.1252a28–30; *GA* 2.1.731b24–732a1; *Metaph.* Θ.8.1050b28–30).¹⁰ Even below the level of plant life, the world's natural cycles, such as the weather cycle whereby the four elementary bodies undergo endlessly repeated intertransformations, are imitations of god's eternal actuality (*Mete.* 1.9.346b35–347a10; *GC* 2.10.336b34–337a7).

It is, in short, scarcely an exaggeration to say that for Aristotle the entire functioning of the natural world, as also that of the heavens, is ultimately to be understood as a shared striving towards godlike actuality.¹¹ Admittedly Aristotle does not very often stand back to view the matter panoramically in this way, for his interest is far more often taken up with specific biological structures and processes and their contribution to the organism's success; but he does view it along these lines in *Metaphysics* Λ.10, the culminating chapter of his theological treatise, to which I shall return in the final section of this chapter.

Even biological structures that might have been accounted for in far more down-to-earth ways are, on occasion, brought by Aristotle under the same explanatory principle of striving for godlikeness. According to Plato in the *Timaeus* (45a3–b2), describing the original creation of the human body, our creators made the face the natural front (here, as in Aristotle's biology, defined by the orientation of the senses), because front is 'more honourable' (*timiōteron*) than back, being both of higher ranking and more appropriate to leadership. This evaluative ranking of directions, which the modernizing interpretation would happily have seen Aristotle consign to history, is a doctrine which on the contrary he develops and frequently

⁹ Cf. *EE* 7.15.1249b13–15, 'For it is not by giving commands that god is ruler, but as the good towards which practical wisdom gives commands.'

¹⁰ Cf. Burnyeat 2004, 24 for the possibility that in addition the latter cycles are for the sake of the former.

¹¹ See esp. Kahn 1985.

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Excerpt

[More information](#)*Teleology, Aristotelian and Platonic*

9

exploits. According to Aristotle, not only is front more honourable than back, but so are right than left and up than down.

To take the up–down polarity, man’s unique uprightness makes him superior, to the extent that his natural up, his head, coincides with the cosmos’s upward direction (*PA* 2.10.656a7–13):

Of this kind is the human race. For it, either alone or most of all among animals known to us, shares in the divine. . . . It is alone in having its natural parts in the natural arrangement, and its up is related in the natural way to the universe’s up. For alone of the animals, man is upright.¹²

At the other end of the biological spectrum, plants have their natural ‘up’ coinciding with the cosmic down, in that their roots – which are functionally their mouths – are down in the soil. For example (*de An.* 2.4.416a2–5):

For up and down are not the same for each and every being, but as the head is in animals so the roots are in plants, if one ought to call organs different or the same by their functions.

Virtually all of this is Platonic in origin. Compare *Timaeus* 90a2–b1:

Concerning the most authoritative kind of soul found in us, we must have the following thought. God has given it to each of us as a daimon – this thing which we say dwells at the topmost part of our body and raises us up from the earth towards what is akin to us in the heaven, because we rightly call ourselves a heavenly plant, not an earthly one. For the divinity keeps our body upright by suspending our head and root from the place out of which our soul was first born.

We can here see how Aristotle’s treatment of plants as inverted human beings has its origin in Plato’s elevation of human beings to the status of inverted plants. In so far as Aristotle gives ‘up’ and ‘down’ their own specialized biological senses – as Plato had already done in speaking of a ‘natural front’ – Aristotle is no doubt saying something scientifically credible.¹³ Try drinking a cup of tea while standing on your head. We might intelligibly ask if you can get the tea to go ‘down’ your throat. Even though its geographical or cosmic direction of flow is up, we understand the expression because in context we assign ‘down’ a meaning determined by biological function alone. Aristotle similarly assigns directions like up

¹² There are many other relevant passages in Aristotle, but I here limit myself to citing for comparison *HA* 1.15.494a20–b1 (which supplies a good deal more detail), and *Juv.* 477a21–3. Gregoric 2005 is a valuable comparison of Plato’s and Aristotle’s explanations of human erect posture, but in my view it does not pay sufficient attention to the intrinsic value that both attach to our postural kinship with cosmic topography, for which (regarding Plato) cf. Osborne 1988, 107–9.

¹³ Thus Lennox 1985, 149–55, replying to Lloyd 1966, 52–61. It will be evident that my main sympathies are with Lloyd, but Lennox is a valuable guide to the controversy.

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Excerpt

[More information](#)

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DAVID SEDLEY

and down their own functional biological senses (*Progression of Animals* [IA] 4–5).

Nevertheless, the use to which Aristotle puts this mode of expression is hardly so innocuous. When he presents up, front and right as ‘better and more honourable’ (*PA* 3.3.665a6–26), he does so in the context of explaining why, in human anatomy, nature sometimes favours these orientations even when practical utility alone would not. Thus the heart, as governing organ, occupies the ‘honourable’ front,¹⁴ even though that in turn requires the windpipe, which services it, to be ‘badly placed’ in front of the oesophagus; the resultant danger of food going down the wrong hole then requires the remedial provision of the epiglottis.

The reason why, regardless of practical utility, Aristotle attaches an honourable status to the body’s sharing the cosmic inclinations up, front and right is his belief, also derived from Plato,¹⁵ that these orientations represent the divine source or direction of motion governing the rotation of the heavens themselves (*Cael.* 2.2). The fact that in the anatomy of the best animals, namely humans, inclinations to front, up and right are repeatedly favoured is therefore one expression of our superior likeness to the divine heavens, and through them to god.

If the whole natural world is, in one way or another, pulling itself up by its own bootstraps in the interests of maximum godlikeness, how is that possible? Desire is a faculty that, according to Aristotle, is found only in animals, yet he is explicit that plants too strive for immortality through reproduction, and that in some attenuated way even the four elementary bodies strive for everlasting actuality. Almost certainly the notion of striving will have to be interpreted reductively, as describing an inherent natural tendency. Such psychologizing descriptions of non-psychological processes, misleading and indispensable in equal measure, have been commonplace in the history of science, from ‘Nature abhors a vacuum’ to Natural Selection and the Selfish Gene. Certainly the *Timaeus* is full of them, including intelligence’s ‘persuasion’ of the four elementary stuffs.

But even after effecting such a reduction, we are left with the following result. The reason why in Aristotle’s view no directive mind can be at work in natural processes is not any preference on his part for ‘scientific’ over theological modes of explanation. It lies rather in the conviction that the

¹⁴ Unlike Lennox 1985, 149–52 (cf. Lennox 2001a, 254), I understand *PA* 3.3.665a19–26 as saying that the reason why the heart must necessarily be at the front is that it is more honourable, and not that it is practically advantageous.

¹⁵ In the *Timaeus* heavenly rotation is both to the right, 36c6, and forwards, 40b1. Cf. also 90a2–b1, quoted above.