

A NATURAL INTERPRETATION OF ARISTOTELIAN TELEOLOGY

JORDAN SMITH

§1: AN OVERVIEW OF ARISTOTLE'S FOUR CAUSES

At several key points throughout his works, Aristotle presents his understanding of the causal mechanisms affecting all-natural substances.¹ In this view, there are four distinct types of causes: material, formal, efficient, and final. Though it is impossible to fully explicate any of these modes of causation in isolation from the others,² some basic distinctions between them can nonetheless be drawn. To start, the material cause refers to “that out of which a thing comes to be and which persists.”³ That is to say, it is the matter of which the thing being explained is composed. In contrast to matter, the formal cause is “the definition of the essence”⁴ in the sense that it defines matter in such a way as to make a substance what it is. Next, Aristotle explains that the efficient cause is “the primary source of the change or rest” in the way

1 E.g. Aristotle, R. K. Gaye, and R. P. Hardie, “Physics,” essay, in *The Complete Works of Aristotle*, ed. Jonathan Barnes, vol. 1 (Princeton, N.J.: Princeton University Press, 1991), II.3, 194b24-195a3. Aristotle, “Metaphysics,” essay, in *The Works of Aristotle*, trans. W. D. Ross, vol. 8 (Oxford, UK: Clarendon Press, 1908), I.3, 983a24-32.

2 D.C. Schindler helpfully describes Aristotle’s four causes as “interdependent.” See D. C. Schindler, *The Catholicity of Reason* (Grand Rapids, MI: William B. Eerdmans Publishing Company, 2013), 145-148.

3 Aristotle, *Physics* II.3, 194b24-194b26.

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that “the father is cause of the child.”⁵ Finally, and most interestingly for current purposes, Aristotle affirms the existence of the final cause “in the sense of end or that for the sake of which a thing is done, e.g. health is the cause of walking about.”⁶ Given that final causation does not only pertain to humans but all-natural substances, Aristotle’s talk of “ends” and actions being “for the sake” of goals may give the impression that he is projecting anthropomorphic categories onto the natural world. Despite first appearances, an examination of his comments on final causality read within the broader context of his metaphysical worldview reveals that this interpretation completely inverts Aristotle’s priorities. For the Stagirite, human intentions are, in fact, teleological (i.e. directed to an end or *telos*) in a merely derivative manner. Rather than human intentions and desires, the primary sense of teleology for Aristotle is the movement of natural substances to their pre-given natural ends.

§2: PROBLEMATIC INTERPRETATIONS OF ARISTOTLE’S TELEOLOGY

In order to demonstrate that the primary point of reference for understanding teleology in Aristotle’s thought is nature, a few common misinterpretations of Aristotelian teleology must first be expounded and subsequently refuted. The first and most basic among these misreadings are those models that attempt to reduce Aristotle’s teleology to some other mode of causation, such as efficient or material. Any account of Aristotle’s teleology qua the study of final causes necessarily presupposes that he *did* affirm a unique mode of final causality. To affirm such a theory, as is required by the thesis that teleology is the movement of substances to their natural ends, therefore requires that reductionistic interpretations of Aristotle’s final causes to some other form of causation be rejected. Second, to determine if Aristotle’s understanding of teleology is grounded in his theory of nature, it will be necessary to discern what he means by the term “nature” (*phusis*). Given Aristotle’s several statements concerning the broadly defined character of nature, it is somewhat surprising how many have restricted his use of the term to merely mean the sum total of biological organisms. This interpretation will be shown to be far too narrow to account for all the situations in which Aristotle makes use of the concepts of

⁵ Aristotle, *Physics* II.3, 194b30-194b32

⁶ Aristotle, *Physics* II.3, 194b33-195a2.

nature and teleology as causal factors. Lastly, any anthropocentric interpretation that claims all things in the universe exists for the sake of mankind as their end runs up against the idea that final causes, in Aristotle, are primarily grounded in the nature of each individual substance and are therefore logically before any consideration of human beings in particular. As shall be demonstrated, the anthropocentric interpretation of Aristotle's teleology goes against his broader metaphysical vision, which affirms the necessity of crafts to make nature useful for mankind. Refuting these three inaccurate understandings of teleology in Aristotle shall constitute the majority of this essay. Once the ground has been cleared, a positive case for a more robust understanding of Aristotelian teleology that is grounded in nature shall be presented.

§3: REDUCTIONISTIC INTERPRETATIONS OF FINAL CAUSES

Several scholars have, in one way or another, argued that Aristotle's conception of final causality is reducible to some other form of causation, but by far the most influential and sophisticated account of this sort is provided by Allan Gotthelf.⁷ He asserts that his understanding of final causes in Aristotle may be summarized as the “irreducible

7 See Allan Gotthelf, “Aristotle's Conception of Final Causality,” essay, in *Philosophical Issues in Aristotle's Biology*, ed. Allan Gotthelf and James G. Lennox (Cambridge, UK: Cambridge Univ. Press, 1987), 204–42. This seminal work has birthed other reductionistic interpretations, sometimes even more reductionistic than Gotthelf's own. E.g. Michael Bradie and Fred D. Miller, “Teleology and Natural Necessity in Aristotle,” *History of Philosophy Quarterly* 1, no. 2 (April 1984): 133–46, esp. 142. Cf. Susan Sauve Meyer, “Aristotle, Teleology, and Reduction,” *The Philosophical Review* 101, no. 4 (October 1992): 791–825, <https://doi.org/10.2307/2185925>. Meyer takes a more epistemological approach to the issue of teleological reducibility: “My conclusion is not that something's efficient cause is its final cause; nor is it that anything with an intrinsic efficient cause thereby has or is a final cause. Rather, my conclusion is simply that some intrinsic efficient causal claims are sufficient for the truth of final-causal claims” (811). The problem with this reading is that, for Aristotle, each type of cause is an “objective factor in nature,” as Balme puts it. David Balme, “Teleology and Necessity,” essay, in *Philosophical Issues in Aristotle's Biology*, ed. Allan Gotthelf and James G. Lennox (Cambridge, UK: Cambridge Univ. Press, 1987), 281. Aristotle's discussion of causes, therefore, fundamentally concerns ontology (as opposed to merely epistemology, as Meyer's interpretation suggests).

potential' interpretation."⁸ Gotthelf chooses this description because, in his view, "[p]rocesses for the sake of something are distinguished from those that are not by the presence in the one case, and the absence in the other, of a potential for form."⁹ In this interpretation, a final cause is the actualization of a potential that something possesses to take on a certain form. Hence, as Gotthelf explains, "For a living organism of a certain form to come to be for the sake of something is precisely for it to result from a sum of actualizations of potentials, one of which—and the most explanatorily important of which—is an irreducible potential for an organism of that form."¹⁰ What Gotthelf means is that, for Aristotle, the matter out of which, say, a moose is made had the potential to take on many different forms, whether that be the form of some other animal or even a race car. To explain why this matter takes on the form that it does (e.g. that of a moose), one must have recourse to form, which provides a definition of matter. To continue with the moose example, some of the matter composing this animal has its potential to be an antler actualized while other material has the potential to be eyes, hooves, or intestines actualized. What Gotthelf wishes to emphasize is that there is one form which unites together all these parts of the moose together so that it is one organism, and there must therefore be a corresponding potential to be a moose in all the matter that makes up its various parts (in addition to the potentials the matter has to be each part of the moose). Because the form of moose interpenetrates all of the parts of the moose and no one part of it can suffice to make a moose, the potential to be a moose cannot be reduced to any one or even any collection of the moose's parts. Final causality, for Gotthelf, is the actualization of this irreducible potential for form. This account connects to Aristotle's teleological language insofar as all the parts of the moose are "for the sake of" the moose as a whole. This whole, in turn, is an "end" in the sense that the organism develops into a fully grown moose, and this stage of development marks its completion. Gotthelf, therefore, presents a respectable interpretation of Aristotle's teleology that takes into account not only the language he uses to describe final causes but also his broader metaphysical system.

Despite the positive qualities Gotthelf's interpretation possesses, it must ultimately be rejected because of its (admittedly subtle) reductionism. Before Gotthelf's theory in particular is addressed, some

8 Gotthelf, "Aristotle's Conception of Final Causality," 251.

9 Gotthelf, "Aristotle's Conception of Final Causality," 250.

10 Gotthelf, "Aristotle's Conception of Final Causality," 250.

general preliminary remarks concerning the problems with reductionistic interpretations of final causality in Aristotle must be made. Prima facie, it would be strange for Aristotle to systematically distinguish between final and efficient causes, only for the former to be reducible to the latter.¹¹ As D. M. Balme puts it, “Aristotle *always* presents the four causes as four separate factors in a causal explanation... They are not one factor plus three alternative descriptions or views of it.”¹² Second, and more to the point, there are multiple places at which Aristotle explicitly denies that final causality is reducible to efficient causality, as Gotthelf implies. To take only the clearest example, in one of his enumerations of the four causes and their distinctions, Aristotle says that the third type of cause is the efficient cause or “the source of the change,” and the final cause or “the purpose and the good” is “opposed to this [i.e. the efficient cause].”¹³ These considerations render implausible any reductionistic interpretation of Aristotelian teleology based on the premise that final causality is simply a way to describe a particular type of efficient causality. What remains to be demonstrated is that Gotthelf’s argument does in fact attempt such a reduction.

Before revealing the reduction of true final causes to merely efficient causes in Gotthelf’s work, it should be acknowledged that he does avoid a particular type of reduction. Indeed, Gotthelf himself clearly believes his theory is wholly non-reductionistic (or even anti-reductionistic), as the self-designation of his interpretation as one of “*irreducible* potential” clearly indicates.¹⁴ He certainly has some claim to the title of non-reductionist insofar as he refuses to let matter’s potential to be some organism be reduced down to matter’s potentials to be each of said organism’s parts. That being said, as Rich Cameron

11 For Aristotle’s definitive distinction between the four causes, see Aristotle, *Physics* II.3, 194b24-195a3.

12 Balme, “Teleology and Necessity,” 281. Emphasis mine.

13 Aristotle, *Metaphysics* I.3, 983a30-32. This example as well as less explicit examples of Aristotle’s distinction between final and efficient causes are explicated in Robert Bolton, “The Origins of Aristotle’s Natural Teleology in Physics II,” essay, in *Aristotle’s Physics: A Critical Guide*, ed. Mariska Leunissen (Cambridge, UK: Cambridge University Press, 2015), 121–43, esp. 122-125. Michael Bradie and Fred. D. Miller also argue for the distinctiveness of final causes vis-à-vis efficient causes in Aristotle’s thought in Bradie and Miller, “Teleology and Natural Necessity in Aristotle,” 137.

14 E.g. Gotthelf, “Aristotle’s Conception of Final Causality,” 251. Emphasis mine.

rightly notes after conceding this same point in his critique of Gotthelf, “his analysis does count as a form of reduction to the material cause in virtue of the fact that the analysans refers primarily to potentialities and potentialities are material elements in Aristotle’s ontology.”¹⁵ Though Cameron sees Gotthelf as reducing final causation to material causation in virtue of matter’s status as potential in Aristotle’s thought, it seems that, in addition to this account, one must also acknowledge that form and efficient causation also play a role in this reduction. After all, Gotthelf is proposing an irreducible potential (the material cause) for form (the formal cause) that must be actualized (by an efficient cause) in order for the conditions of a final cause to obtain. This difference between Cameron’s critique and my own, of course, does not detract from the main issue, namely that Gotthelf’s interpretation does not present an actual account of final causes but merely reduces them to some other form(s) of causation. Indeed, it seems Gotthelf is willing to acknowledge the reality of every type of cause Aristotle presents, except for final causes! This means that Gotthelf’s argument does in fact fall victim to the critiques of reductionistic arguments presented above and that his interpretation, though coherent, is not true to the thought of Aristotle himself who maintains a firm distinction between all four types of causes.

§4: RESTRICTIVE INTERPRETATIONS OF TELEOLOGY

The claim that Aristotle’s teleology is *intrinsically* grounded in the natures of the various entities that populate the cosmos necessarily entails that anything that has a nature (including everything from dirt to the stars to human beings) can be acted upon by a final cause. But there are many alternate readings of Aristotle, which preclude such a broad understanding of nature and, by extension, teleology. The primary mistake made when restricting the scope of Aristotle’s application of final causes is assuming that his conception of teleology entails a transposition of anthropomorphic categories onto the natural world.¹⁶ This mistake can be seen in the work of E. Zeller who claims

15 Rich Cameron, “The Ontology of Aristotle’s Final Cause,” *Apeiron* 35, no. 2 (June 2002): 173, n. 43 and 44, <https://doi.org/10.1515/apeiron.2002.35.2.153>.

16 Gotthelf, though he does restrict teleological explanation to biological entities, nonetheless identifies this as one of two fundamental misinterpretations of Aristotle. Gotthelf, “Aristotle’s Conception of Final Causality,” 251, n. 52.

that “Aristotle cannot conceive of regulated and orderly events except under the analogy of human action directed towards an end.”¹⁷ Similar reasoning leads several other scholars to make the mistake of maintaining that Aristotle held final causality to only be applicable to biological organisms, which likewise evince some degree of desire and intentionality. This path is taken, among others, by D. M. Balme who argues for this restrictive interpretation specifically to the exclusion of material elements: “The sublunary elements, air earth fire and water, act teleologically only when they are part of a living body; outside that (for instance in the occurrence of rainstorms) there is no final cause acting on them... Aristotle confines natural teleology to sublunary life.”¹⁸ Compared to Balme, John M. Cooper is more attentive to Aristotle’s numerous claims that, in addition to biological entities, the elements are also subject to final causality. Yet, in the end, he too empties final causes of any real efficacy, as he dismisses Aristotle’s claims concerning objective ends for the elements, saying, “this just refers e.g. to fire’s tendency to heat things up.”¹⁹ On this reading, elemental teleology is reduced simply to a way of expressing the way the elements happen to behave without providing an explanation of why such behavior occurs regularly. Finally, the most powerful argument in favor of the view that Aristotle holds teleological explanations only to pertain to biological organisms is certainly Gotthelf’s observation that “in almost every passage in which Aristotle introduces, discusses, or argues for the existence of final causality, his attention is focused on the generation and

¹⁷ Eduard Zeller, *Aristotle and the Earlier Peripatetics*, vol. 1, 2 vols. (London, UK: Longmans, Green, and Co., 1897), 459. Zeller additionally claims that Aristotle explicitly states that the natural world, including the material elements, are in some sense alive. Specifically, he cites *Physics* VIII.1, 250b10-250b14, the relevant part of which asks, “Is it [i.e. motion] in fact an immortal never-failing property of things that are, a sort of life as it were to all naturally constituted things?” This one question out of the entire Aristotelian corpus hardly suffices to demonstrate that Aristotle maintained a sort of universal animism, especially when one considers the possibility that Aristotle here refers to “a sort of life” because he associates eternity with the divine, which is alive in some sense (This, and not anthropomorphism, is incidentally why Aristotle attributes life to the stars, which he believes are eternal). The point being conveyed, as the context clearly shows, is the eternity of motion, not the animacy of matter.

¹⁸ Balme, “Teleology and Necessity,” 277.

¹⁹ John M. Cooper, “Hypothetical Necessity and Natural Teleology,” essay, in *Philosophical Issues in Aristotle’s Biology*, ed. Allan Gotthelf and James G. Lennox (Cambridge, UK: Cambridge Univ. Press, 1987), 268, n. 26.

development of a living organism.”²⁰ There is, therefore, a strong case to be made for a restrictive reading of teleology in Aristotle such that only living beings can be affected by final causes.

Despite the multiple lines of evidence pointing towards a restrictive interpretation of teleology, such an understanding is simply not comprehensive enough to capture all the uses of final causes in the Aristotelian corpus. Though the various interpretations of the restrictive view of final causes each contain their own particular flaws, all sides of the debate agree that Aristotle attributes teleology to those things which possess a nature.²¹ The contested issue, therefore, is specifically what types of entities possess a nature (*phusis*) according to Aristotle. The views presented above generally ascribe a nature only to biological beings,²² but an analysis of Aristotle’s explicit comments on the subject reveal that he certainly had a much broader understanding of the concept of nature. At the opening of *Metaphysics* VIII, for example, Aristotle lists “fire, earth, water, air” as the prime examples of “natural substances,” which are “recognized by all thinkers.”²³ Aristotle provides further corroborating evidence of this broad understanding of nature in *De Caelo* III where he introduces the following distinction: “Now things that we call natural are either substances or functions and attributes of substances. As substances I class the simple bodies—fire, earth, and the other terms of the series—and all things composed of them; for example, the heaven as a whole and its parts, animals, again, and plants and their parts.”²⁴ Both of these passages make it clear that,

20 Gotthelf, “Aristotle’s Conception of Final Causality,” 229, n. 7, which refers back to his citations in n. 2 and 5.

21 E.g. Balme, “Teleology and Necessity,” 275; Cooper, “Hypothetical Necessity and Natural Teleology,” 244; Zeller, *Aristotle and Earlier Peripatetics*, 459.

22 Zeller is an exception to this as he believes Aristotle attributes teleology to anything with intentions, and Zeller goes on to affirm that Aristotle teaches everything has at least some low-level of conscious intentionality. Zeller, *Aristotle and Earlier Peripatetics*, 459-461. For a refutation of this interpretation, see n. 17.

23 Aristotle, *Metaphysics* VIII.1, 1042a6-12.

24 Aristotle, *De Caelo*, trans. J. Stocks (Oxford, UK: Clarendon Press, 1922), III.1, 598a29-32. See also *De Caelo* I.1, 268a1-6 where Aristotle defines the scope of the study of nature so broadly that it can include the whole material world, except man-made artifacts. For an analysis of this passage, see Monte Ransome Johnson, *Aristotle on Teleology* (Oxford, UK: Clarendon Press, 2008), 133.

on Aristotle's account, substances with natures are not limited to plants and animals but also includes the four elements and the heavenly bodies.

Though Aristotle's explicit statements as to what is included under the scope of nature suffice to undermine the restrictive interpretations presented above, these basic observations still leave open the question of precisely *why* these incomplete understandings fail. That is to say, what has been dealt with so far are merely conclusions, not premises and reasoning. To see why the reasoning behind the restrictive interpretations of nature fails, one must understand the criterion that Aristotle uses to include something under the category of nature. He holds that natural and non-natural substances "plainly differ" since every case of the former "has within itself a principle of motion and of stationariness (in respect of place, or of growth and decrease, or by way of alteration)."²⁵ For Aristotle, nature *is* this principle of motion and rest. His standard of what constitutes a natural substance therefore clearly presents a disjunction where any one of various conditions is satisfactory, but it seems that the restrictive theories of nature take the "growth and decrease" characteristic of organisms to be a necessary condition for naturalness. If Aristotle's own standard is applied, however, then the elements are manifestly teleological for Aristotle, since he believes they have a natural tendency to move "in respect of place." Earth has a tendency to move down, followed by water, and air tends to move up, only surpassed by fire.²⁶ Thus, Aristotle holds that the motion

²⁵ Aristotle, *Physics* II.1, 192b12-15.

²⁶ Christopher Byrne argues that the movement of the elements to their respective usual places is not driven by a teleology grounded in nature. His reasoning is that Aristotle claims the elements will not move teleologically if placed in a void, which implies that the teleological motion of the elements is not grounded in the substances themselves but in their mutual relations. Byrne concludes from this that natural motion refers to physically necessary motion (as opposed to teleological motion), and in this he seems to stand alone among scholars. I believe this is for good reason, since in addition to claiming that teleological motion is not possible in the void, Aristotle also says that physically necessary motion is impossible, which means one could wage the same critique concerning the non-intrinsic character of the type of motion in question against Byrne's claim that physically necessary motion is natural motion. Aristotle's express point is that no motion is possible in a void because *all* motion requires the ability to go, say, up or down, but these categories make no sense in the context of a void which lacks a point of reference. Additionally, in the very passage to

of elements to the place they usually rest is the result of a natural teleological movement, and this means both nature and teleology extend to all substances that possess a tendency to change in some consistent manner.

Though the specification of what exactly Aristotle means by nature implicitly shows that most arguments for a restrictive interpretation of teleology fail to adequately account for elemental motion, the question still remains why Aristotle puts so much emphasis on biological examples when discussing final causes. Exploring this issue also helps clarify why so many scholars mistakenly restrict the purview of final causes to plants and animals in Aristotle, despite the “irresistible” conclusion (to use Robert Wardy’s description) that Aristotle believes elemental motion is teleologically driven.²⁷ Though certain scholars, such as Rich Cameron, have claimed that the constriction of final causality in Aristotle to the purely biological sphere is “motivated by modern doubts concerning the coherence of final causality,”²⁸ the ubiquity of biological examples in Aristotle’s presentations of teleology provides a more generous interpretation of the restrictive teleology reading. To see how, one must turn to *Physics* II.8 where Aristotle explains that “the form must be the cause in the sense of that for the sake of which.”²⁹ That is to say, wherever a formal cause is present, so too

which Byrne refers, Aristotle says that natural motion is prior to all other types of motion and makes them possible. Aristotle then says that natural motion is not possible in the void because there is neither up nor down. The language of up, down, and natural motion is reflective of Aristotle’s broader discussions of elemental teleological motion (as opposed to physically necessary motion, which by definition is not directed towards any direction in particular). This implies that teleological motion is in fact natural motion, and physically necessary motion is (as Aristotle says elsewhere) defined as the deviation from this natural motion. Christopher Byrne, “Aristotle on Physical Necessity and the Limits of Teleological Explanation,” *Apeiron* 35, no. 1 (March 2002): 19–46, <https://doi.org/10.1515/apeiron.2002.35.1.19>. Cf. Aristotle, *Physics* IV.8, 215a1–13.

27 Robert Wardy, “Aristotelian Rainfall or the Lore of Averages,” *Phronesis* 38, no. 1 (1993): 20, <https://doi.org/10.1163/156852893321052433>.

28 Cameron, “The Ontology of Aristotle’s Final Cause,” 153. Cf. Margaret Scharle, “Elemental Teleology in Aristotle’s *Physics* 2.8,” essay, in *Oxford Studies in Ancient Philosophy*, ed. David Sedley, vol. 34 (Oxford, UK: Oxford University Press, 2008), 149.

29 Aristotle, *Physics* II.8, 199a30–32.

will a final cause.³⁰ For current purposes, the relevance of this is that final causes are as easily identifiable as formal causes, since a final cause is present wherever a formal one is. If form is more apparent in plants and animals, then it follows that teleology is similarly more obvious in these cases. As Joseph Owens explains, the variegated character of the cosmos in Aristotle's thought allows "form to play a proportionately greater role in the inanimate, plant, and animal kingdoms respectively, with corresponding increase in the obviousness of the teleology."³¹ The prevalence of biological examples in Aristotle's discussion of final causality can, therefore, be explained in terms of pedagogical purposes. Aristotle uses the examples that are most obvious and easiest to discuss to demonstrate his points so as to avoid confusion. The restrictive interpretation of teleology in Aristotle's works is thus reflective of the Stagirite's predilection for biological examples, which is grounded in his hierarchical ontology of form and matter. This being said, Aristotle's preference for explaining teleology in terms of biological processes should not be taken at the exclusion of other objects of final causes, as is done by those who support the restrictive interpretation of teleology.

§5: THE ANTHROPOCENTRIC INTERPRETATION OF TELEOLOGY

Bar none, the most influential presentation of the anthropocentric reading of teleology in Aristotle is that of David Sedley. Unlike those guilty of anthropomorphism who claim that the world possesses some low level of intentionality, Sedley argues that everything (even elements devoid of consciousness) in the universe is for the sake of mankind. That is, humans are the final cause and end of all things. This basic presentation, however, requires an important qualifier. Sedley correctly notes that Aristotle draws a distinction between two ways one thing can be for the sake of something else. This distinction is that "between the *beneficiary* of a process or state of affairs, and its *aim* or

³⁰ The reason Aristotle does not directly identify formal and final cause appears to be that artifacts have ends and therefore final causes, but since they are not natural substances, they do not have a form. Final causes, therefore, are a broader category than formal causes.

³¹ Joseph Owens, "Teleology of Nature in Aristotle," *Monist* 52, no. 2 (April 1968): 173, n. 51, <https://doi.org/10.5840/monist196852215>. Owens rightly cites Aristotle's *Meteorology*, IV.12, 390a2-b2 to confirm his point.

*object of aspiration.*³² The essence of this distinction is that something can be an end either in the sense of being benefited or by making others imitate itself. With this dichotomy firmly established, Sedley is able to clarify that “Nature is anthropocentric to the extent that man is the ultimate *beneficiary*.”³³ If this is true, then Aristotelian teleology would not be grounded in the nature of each substance, as I have claimed, but in human nature in particular. Sedley’s interpretation, therefore, must be dealt with in detail prior to constructing a positive interpretation of Aristotle’s teleology grounded in the natures of each substance.

Sedley presents two main arguments in support of his anthropocentric reading of Aristotelian teleology. The first among these is simply conveying what Aristotle, himself, explicitly states concerning the issue. At one point, Aristotle claims: “For the arts too make their material: some of it they make simpliciter, some of it they make workable. And we use it *on the ground that everything exists for our sake*. For we ourselves too are, in one sense, an end.”³⁴ Sedley would, of course, interpret the “in one sense” to mean in the sense of a beneficiary.³⁵ On this reading, it is hard to ignore the presence of a universal anthropocentrism in Aristotle’s thought. Furthermore, in a passage in the *Politics*, Aristotle expresses a similarly broad understanding of the scope of entities that are for the sake of mankind:

Hence it is equally clear that we should also suppose that, after birth, plants exist for the sake of animals, and the other animals for the sake of men — domesticated animals for both usefulness and food, and most if not all wild animals for food and other assistance, as a source of clothing and other utilities. If, then, nature makes nothing incomplete or pointless, it is necessary that nature has made them all for the sake of men.³⁶

32 David Sedley, “Is Aristotle’s Teleology Anthropocentric?,” *Phronesis* 36, no. 2 (1991): 180, <https://doi.org/10.1163/156852891321052778>.

33 Sedley, “Is Aristotle’s Teleology Anthropocentric?,” 180.

34 Aristotle, *Physics* II.2, 194a33-36. Quoted in Sedley, “Is Aristotle’s Teleology Anthropocentric?,” 189.

35 Sedley, “Is Aristotle’s Teleology Anthropocentric?,” 189.

36 Aristotle, *Politics* I.8, 1256b10-22. Quoted in David Sedley, “Is Aristotle’s Teleology Anthropocentric?,” 180. Aristotle’s caveat that it is “most if not all” wild animals that are beneficial should make one suspicious of how precise Aristotle’s statements of the universality of anthropocentric teleology are intended to be.

According to this passage, in virtue of their ability to provide food, clothing, and assistance, animals are for the sake of humans. Additionally, plants are for the sake of animals since the former can be eaten by the latter, and plants, in turn, are the beneficiaries of the elements (e.g. water used by a flower for hydration). Thus, it would seem, all of the natural world is indirectly implicated in the anthropocentrism of final causality.

In addition to direct textual evidence, Sedley also presents an argument for his anthropocentric reading on the basis of an oft-discussed passage concerning the teleology of winter rain. In his refutation to Empedoclean natural philosophy, which denies the reality of final causes, Aristotle proposes an objection to his own view followed by his response:

A difficulty presents itself: why should not nature work, not for the sake of something, nor because it is better so, but just as the sky rains, not in order to make the corn grow, but of necessity?... Yet it is impossible that this should be the true view.... We do not ascribe to chance or mere coincidence the frequency of rain in winter, but frequent rain in summer we do; nor heat in summer but only if we have it in winter. If then, it is agreed that things are either the result of coincidence or for the sake of something, and these cannot be the result of coincidence or spontaneity, it follows that they must be for the sake of something.³⁷

The relevance of this passage is that Aristotle claims winter rain is not solely the result of blind mechanical forces; rather, it is for the sake of something. Additionally, Aristotle claims that summer rain is attributed to chance, since it usually does not rain in the summer in Athens. Sedley nicely summarizes his thoughts on this topic: “Clearly, then, he [i.e. Aristotle] thinks that winter rainfall is for a purpose, and natural, and that it is only summer rainfall that is accidental, and, strictly speaking, unnatural.”³⁸ In virtue of this distinction, Sedley is able to claim that the specific case of teleological winter rainfall, at least, is not the result of water’s movement towards its own natural place (down to the earth).³⁹

³⁷ Aristotle, *Physics* II.8, 198b17-199a8.

³⁸ Sedley, “Is Aristotle’s Teleology Anthropocentric?,” 183.

³⁹ Sedley, “Is Aristotle’s Teleology Anthropocentric?,” 184. Sedley does admit that Aristotle affirms the reality of teleology grounded in the movement

If it were, then rainfall in both the winter and the summer would be considered teleological. But, so Sedley claims, Aristotle's distinction between winter and summer rain implies that only the former is teleological. Given this assumption that the final cause of winter rainfall cannot be its proclivity to return to its natural place, Sedley concludes: "It rains [in the winter] in order to make the crops grow."⁴⁰ The growth of crops, of course, is beneficial for the people producing them, so this reading of Aristotle's winter rain argument further confirms Sedley's anthropocentric interpretation of teleology.

When addressing Sedley's arguments, some problems immediately arise. For starters, there is a grammatical ambiguity in the Greek of the passage Sedley translates as "everything exists for our sake."⁴¹ Sedley acknowledges that the passage is usually rendered in a counterfactual manner such that Aristotle's meaning would be "It is as if everything exists for our sake," but Sedley rather flippantly dismisses this alternate translation, saying it "must merely reflect an interpretative prejudice."⁴² Robert Wardy concedes that Sedley's "grammatical observation is correct—so long as one appends the *caveat* that the construction does not preclude the counterfactual reading either," since the expression used "is the ideal Greek construction for *not* making a commitment."⁴³ The issue, therefore, cannot be solved solely at the grammatical level. One must interpret the expression in context to determine its meaning. Sedley does so, but he fails to appreciate the variety of interpretations the passage welcomes. Interpreting Aristotle's

of elements to their natural places, but he limits the scope of this type of causality such that it is not applicable to winter rainfall. It is unclear why Sedley could not affirm that it rains in the winter *both* for the sake of crop growth and for water to reach its natural place or that winter rain is solely for the sake of crop growth but winter rain can still be for the sake of water attaining its natural place. By ignoring these options, Sedley is forced to maintain that summer rain cannot be teleological at all, which seems to run up against his concession that the elements can be teleologically driven to their natural place.

40 Sedley, "Is Aristotle's Teleology Anthropocentric?," 184.

41 Aristotle, *Physics* II.2, 194a33-36. Quoted in Sedley, "Is Aristotle's Teleology Anthropocentric?," 189. The ambiguity, in specific, is that the construction $\omega\varsigma$ plus participle can connote uncertainty. Cf. Wardy, "Aristotelian Rainfall or the Lore of Averages," 27.

42 Sedley, "Is Aristotle's Teleology Anthropocentric?," 189.

43 Wardy, "Aristotelian Rainfall or the Lore of Averages," 27. Emphasis in original.

claim in light of the broader context concerning the arts, Sedley states that “Aristotle’s clear meaning is that the *assumption* underlying our practices of cooking, pottery, sculpture, and all such arts is that the raw materials of those arts—the meat, clay, bronze, stone, and wood—exist for our benefit.”⁴⁴ But this interpretation is by no means “clear,” or at least this reading does not exclude equally clear alternative ones. Indeed, it seems quite likely that Aristotle has in mind here that everything exists for our sake in the sense that it is capable of being altered for our benefit by various arts. If, as Sedley suggests, Aristotle believes all things do exist for our sake in a direct sense, then the purpose of art becomes unintelligible. If everything is naturally oriented towards the benefit of mankind, then why do people need to use art to “make workable”⁴⁵ natural materials? Indeed, as shall be further elaborated below, Sedley’s singular failure seems to be this underestimation of the importance of art in the Aristotelian system for making natural entities beneficial for humans.

Aristotle’s claim that animals exist for the sake of men, plants for the sake of animals, and so on does not suffice to prove Sedley’s conclusion concerning a universally anthropocentric teleology. Aristotle ends the passage where he affirms this seemingly anthropocentric theory of final causality as follows: “If, then, nature makes nothing incomplete or pointless, it is necessary that nature has made them all for the sake of men.”⁴⁶ Sedley obviously takes this to mean Aristotle is affirming that all things are in fact for the sake of man, and the immediate context does admittedly lend itself to such an interpretation. However, Aristotle’s general comments on nature actually require the rejection of the conditional’s antecedent, thereby leaving the conclusion dubious. That is to say, Aristotle elsewhere claims that nature does make some things incomplete, which means nature does not necessarily act for the sake of mankind. That some things in nature are incomplete according to Aristotle is manifest in his discussion of the need for art, of which he says “generally art in some cases completes what nature cannot bring to a finish.”⁴⁷ If nature needs to be finished by art, it follows that nature is in the relevant sense not complete. The

44 Sedley, “Is Aristotle’s Teleology Anthropocentric?,” 189. Emphasis in original.

45 Aristotle, *Physics* II.2, 194a33-36.

46 Aristotle, *Politics* I.8, 1256b10-22. Quoted in Sedley, “Is Aristotle’s Teleology Anthropocentric?,” 180.

47 Aristotle, *Physics* II.8, 199a9-19.

relevant sense of nature's deficiency is, in fact, precisely what Sedley mistakenly claims constitutes the perfection of nature, namely its being beneficial for mankind. In fact, Aristotle was well aware of the obvious empirical fact that art is often necessary to make natural substances useful to mankind, as in the case of the arts of hunting, farming, etc. Aristotle's claim that "[i]f, then, nature makes nothing incomplete or pointless, it is necessary that nature has made them all for the sake of men"⁴⁸ must therefore be read in the sense of *insofar as* nature is complete, it is for the sake of mankind, but this does not exclude the fact that the intervention of art is frequently necessary to bring nature to its completion.

Finally, Sedley's use of the winter rainfall example fails because it relies on the premise that only winter rain, which is beneficial to humans, is teleological whereas useless summer rain is not teleological.⁴⁹ The distinction Aristotle draws between the two types of rain, however, is between what is regular and irregular, not teleological and non-teleological, and the reason Aristotle employs this distinction is because of the dialectical character of the passage. He is trying to prove to his Empedoclean objectors that teleology is a real phenomenon, so he naturally chooses the easiest examples to prove this, and the teleology of winter rain is more obvious than summer rain, not because it happens for the sake of mankind but because it happens consistently. But, as Aristotle clearly believes, water in general consistently returns to the ground in virtue of its nature. Though, as a broader metaphysical claim, this is harder to prove and would therefore detract from his main point. Hence, Aristotle chooses to focus his argument on winter rain in specific.

Even if this dialectical reading of Aristotle's intentions is mistaken, Sedley's interpretation is not only unsupported by Aristotle's writings; it is directly refuted. Sedley affirms Aristotle's conclusion to his discussion of winter and summer rainfall: "Therefore action for an end is present in things which come to be and are by nature."⁵⁰ Aristotle thus establishes being a natural substance as a sufficient condition for being teleological. Since Sedley wishes to say that summer rainfall, which does not aid in crop growth and is therefore not helpful to mankind, is not teleological, Sedley is therefore forced to maintain that

48 Aristotle, *Politics* I.8, 1256b10-22. Quoted in Sedley, "Is Aristotle's Teleology Anthropocentric?," 180.

49 Sedley, "Is Aristotle's Teleology Anthropocentric?," 183.

50 Aristotle, *Physics* II.8, 199a1-8.

summer rainfall is “unnatural.” However, as Monte Ransome Johnson has observed, “rainfall is not a substance,”⁵¹ which means it does not possess a nature at all. On the other hand, “[w]ater is a substance, and so it can be teleologically explained.”⁵² This means that, given that teleology applies to all natural substances, if winter rainfall qua water is subject to final causality, so too summer rainfall qua water must be teleological. Aristotle’s metaphysics does not allow for the division Sedley attempts to introduce when he claims that winter rain is natural and therefore teleological, but summer rain is unnatural and therefore not susceptible to final causes. Water is the nature of all rain, regardless of when it falls, so all rainfall insofar as it is water must be teleological. Since water must be treated as an irreducible category when discussing its relation to final causes, Sedley cannot claim that water as a whole is for the sake of mankind, since his whole argument presupposes that a certain type of water, namely summer rainfall, is not beneficial for people. One is thus left wondering what is the true end of water, and this raises the more general question of to what are all natural substances teleologically oriented. Answering this question will require a full elaboration of an interpretation of teleology in Aristotle’s works as grounded in the natures of substances.

§6: THE NATURAL INTERPRETATION OF TELEOLOGY

Several lines of evidence converge on the conclusion that, for Aristotle, teleology is grounded in the nature of each particular type of substance. The notion that nature is the driving force behind Aristotle’s teleology is apparent in the opening line of *Physics* 2.8, where he states that “Nature belongs to the class of causes which act for the sake of something.”⁵³ Nature, as has already been established, refers to the totality of the nature of substances, ranging from the dirt below to the stars above, and all the organisms in between. Though Aristotle seems to identify nature as a subclass within the broader category of causes for the sake of something, his additional indirect statements concerning the relation between final causes and nature reveal that the latter constitute the majority of the former. The only other type of final causes, which are often mistakenly taken as the paradigm of final causality in Aristotle, are the arts. Artistic creativity is not central to Aristotle’s

⁵¹ Johnson, *Aristotle on Teleology*, 156.

⁵² Johnson, *Aristotle on Teleology*, 156.

⁵³ Aristotle, *Physics* II.8, 198b10-16. Cf. Scharle, “Elemental Teleology in Aristotle’s *Physics* 2.8,” 152-154.

understanding of teleology. This notion has already been implicitly demonstrated in the refutation of the biological interpretation of teleology, which posits that intentionality is the essence of final causation for Aristotle. Since the totality of biological organisms does not exhaust the scope of entities subject to final causes, it follows a fortiori that artistic creativity, a very narrow type of animal intentionality, does not provide a sufficiently comprehensive model to understand Aristotle's theory of final causes. To demonstrate that it is nature, as opposed to the arts, which holds the central place among Aristotle's final causes, it will be necessary to observe precisely why he believes they are final causes at all.

Aristotle's identification of nature and form implies that natures are the ends in the fullest sense of the term. This comes out most clearly in *Physics* II.8: "And since nature is twofold, the matter and the form, of which the latter is the end, and since all the rest is for the sake of the end, the form must be the cause in the sense of that for the sake of which."⁵⁴ Here, as he says elsewhere, Aristotle affirms that nature can be spoken of as either the matter of something or as its form. Nature, however, is more properly spoken of as form because "a thing is more properly said to be what it is when it exists in actuality than when it exists potentially."⁵⁵ Whereas matter has the potential to take on all sorts of different shapes, form is what gives definition to matter and makes it what it is. Hence, the nature of a substance is in the strictest sense identical to its form. Given the identification of form and nature, it becomes clear that nature is for the sake of which things exist, since Aristotle clearly states that form is the end towards which substances strive. Furthermore, he directly identifies nature qua form as a final cause. Since the form is the actualization and therefore perfection of matter, all matter in a natural substance is for the sake of its nature qua form. Contrary to the restrictive interpretations of Aristotelian teleology, which require a diachronic development towards a final end such that the end is only achieved at the very end of a process (e.g. a baby moose is for the sake of the adult moose that will not emerge in time until years later), Aristotle affirms that in each and every moment matter is wholly striving for its form in all substances.

If Aristotle really does believe that teleology refers to the actualization of a substance's nature, then it is unclear why he insists on

⁵⁴ Aristotle, *Physics* II.8, 199a25-33.

⁵⁵ Aristotle, *Physics* II.1, 193b7-12.

using the seemingly anthropomorphic language of actions performed “for the sake of” some “end.” This problem is resolved, however, when one realizes that for Aristotle, in order for something to qualify as an end, it must be good. More precisely, Aristotle argues that each substance has its own particular good. For example, in the chapter immediately preceding the winter rainfall example, he explains something can count as an end “because it is better thus (not without qualification, but with reference to the substance in each case).”⁵⁶ Monte Ransome Johnson sums up the implications of this and several similar remarks made throughout the Aristotelian corpus: “The good which teleological explanations make reference to is specific to the natural kind being explained. The good is not the same for all kinds of things, for fishes, birds, and plants (not to mention stars, elements, households, cities, etc.).”⁵⁷

Finally, a clearer image of Aristotle’s conception of teleology emerges. All substances possess a nature, which is an internal principle of motion and rest. These natures are what allow substances to move to their respective ends, which vary according to the substance in question. In moving towards these ends, substances are moving towards their nature qua form, which is their actuality. When this full actuality is obtained, a nature qua principle of rest is in a state of full actualization, and the being has reached its perfection, both in the sense of completion and goodness. Because of the intrinsic moral character of these natural ends, Aristotle speaks appropriately when he says that non-conscious entities act for the sake of ends, just as human beings always seek out their own good and perfection.

§7: CONCLUSION

It is certainly easier to see the problems with alternative interpretations of Aristotle’s conception of teleology in retrospect. For example, Aristotle’s claim that final causes are a broader category that encompasses all formal causes shows that the former is not reducible to the latter. None of those who promote a reductionistic interpretation of final causes in Aristotle claim that formal causes are reducible to any other type of cause. Hence, insofar as final causes are formal causes (and even exceed them), final causality similarly cannot be reduced to any other mode of causation. With respect to the claim that natural

⁵⁶ Aristotle, *Physics* II.7, 198b8-9.

⁵⁷ Johnson, *Aristotle on Teleology*, 278.

substances capable of teleological explanation are merely coextensive with biological organisms, this is patently untenable in light of the metaphysical foundation of final causes in the actuality of forms. Since teleology is the movement of a substance's nature to its form, any entity with an internal principle of motion-oriented towards a consistent good end is subject to final causes. For Aristotle, this includes not only plants and animals but also the elements, which reach their fullest actuality when in their natural places. Revisiting Sedley's anthropocentric interpretation, one can see that making mankind the end of all substances ignores Aristotle's claim that the good towards which each substance strives is specific to that kind of substance. The best refutation of these rival theories is therefore the establishment of Aristotle's actual view that teleology is grounded in substance's natural movement towards pre-defined ends.

It is understandable why so many scholars wish to propose alternative solutions to the problem of teleology in Aristotle. His understanding of causality can seem foreign and even paradoxical. After all, in Aristotle's account, nature is both the principle of motion and the form towards which this principle strives. But this paradox ought not to be avoided, as Aristotle openly affirms it: "Nature in the sense of a coming-to-be proceeds towards nature."⁵⁸ For Aristotle, nature is in some sense self-transcending, such that it is both what strives and what is striven after. This is part of his answer to the question, which plagued earlier Greek philosophers: How is change possible at all? Any non-paradoxical answer to this question runs the risk of creating either a static universe of eternal forms or an unintelligible world of matter moving about randomly. If we are to take Aristotle's metaphysics and the philosophical tradition he inherited seriously at all, therefore, we must make a central place for his account of teleology grounded in the natures of substances.

⁵⁸ Aristotle, *Physics* II.1, 193b13.

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