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Aristotle, Heereboord, and the Polemical Target of Spinoza's Critique of Final Causes

ANDREA SANGIACOMO*

ABSTRACT This paper aims to identify the polemical target of Spinoza's critique of final causes in the Appendix to the first part of the *Ethics*. I assess Spinoza's arguments on the background of a comparison between Aristotle's own account of unthoughtful teleology and Adriaan Heereboord's account of final causes proposed in his *Meletemata Philosophica* (1654). Although Heereboord explicitly presents himself as an Aristotelian and an anti-scholastic, his view on final causes is at odds with that of Aristotle and can be rather traced back to Suárez. The paper proves that Spinoza's arguments are effective against Heereboord's view, but not against Aristotle's.

KEYWORDS Spinoza, Aristotle, Heereboord, teleology, final causes

Gatsby believed in the green light, the orgiastic future that year by year recedes before us. It eluded us then, but that's no matter—tomorrow we will run faster, stretch out our arms farther. . . . And one fine morning—So we beat on, boats against the current, borne back ceaselessly into the past.

F. Scott Fitzgerald, *The Great Gatsby*, 115

I. POLEMICS IN FOCUS

IN THE APPENDIX TO THE FIRST PART of the *Ethics*, Spinoza famously claims that “all final causes are nothing but human fictions” (G II.80/C 111¹). From the very beginning of its reception until the present day, supporters (and opponents)

¹Acknowledgment note: this paper is part of the research project “Naturalism and Teleology in Spinoza's Philosophy,” funded by the Fritz Thyssen Stiftung and led by Martin Lenz at the University of Groningen. I would like to thank Han Thomas Adriaenssen, Sander de Boer, Matthew Duncombe, Matthew Kisner, Martin Lenz, Lodi Nauta, Tamer Nawar, Detlev Pätzold, Marco Sgarbi, Stephan Schmid, Maarten van Dyck, and Charles Wolfe for their helpful comments on previous versions of this paper.

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of Spinoza's philosophy commonly praised (and blamed) this attack on final causes. In fact, Spinoza emphatically introduces the Appendix by making clear that a correct understanding of what he demonstrated in the first part of the *Ethics*—the fundamentals of Spinoza's own philosophy—depends on the reader's ability to discard final causes. In the Preface to Part IV, Spinoza contends that he had "shown in the Appendix of Part I, that Nature does nothing on account of an end. . . . What is called a final cause is nothing but a human appetite insofar as it is considered as a principle, or primary cause, of some thing" (G II.206/C 198). To be fair, Spinoza often seems to license teleological statements. The most famous case is his formulation of his conatus doctrine, in which he argues that "each thing, as far as it can by its own power, strives to persevere in its being" (E 3p6).² However, scholars invoke the importance attributed by Spinoza himself to his arguments against final causes to downplay, if not to dismiss, a teleological reading of this and similar statements.³

In this paper, I contend that the arguments Spinoza presents in the Appendix target a specific account of final causes, but do not dismiss all kinds of teleology altogether. In fact, in dealing with final causes, it must be remembered that final causes have been conceived of in a variety of ways across the history of philosophy, and arguments that dismiss a certain account do not necessarily work against other conceptions as well. To support this claim, I assess the efficacy of Spinoza's arguments concerning two different accounts of final causes, one provided by Aristotle's *Physics* and the other by Adriaan Heereboord's *Meletemata Philosophica* (1654). I have three main reasons to focus on these texts.

The first reason is textual, namely, there is evidence that Spinoza had direct knowledge of both these authors. Spinoza owned the edition of Aristotle's complete works and made use of it in the *Cogitata Metaphysica*.⁴ Spinoza also explicitly mentions Heereboord's name in the *Cogitata* and quotes the *Meletemata* at length to discuss the account of freedom of indifference that he aims to reject (CM part 2, ch. 12 in G I.279/*Complete Works* 211).⁵ For this reason, scholars agree that

²For a teleological reading of the conatus doctrine, see Nadler, *Spinoza's Ethics: An Introduction*, 198–99; Lin, "Teleology and Human Action in Spinoza." For an outline of the passages that seem to support the teleological reading, see Garrett, "Teleology in Spinoza," 312–14. From a terminological point of view, I refer to 'teleology' as the goal-directness of natural processes and to 'final causes' as the cause of the goal-directness of natural processes. This distinction is not always explicit in Spinoza scholarship, in which 'teleology' and 'final causes' are sometimes used interchangeably. This distinction was in fact not explicit before Christian Wolff, and thus Spinoza's dismissal of final causes could be conflated with a dismissal of teleology altogether. Yet Schmid (*Finalursachen in der frühen Neuzeit*, 229–300) claims that Spinoza's dismissal of final causes is consistent with a teleological reading of his conatus doctrine.

³Carriero ("Spinoza on Final Causality") developed a fully "inertial" reading of Spinoza's notion of conatus that aims at avoiding any of its teleological implications. However, as McDonough observes, "[T]he concept of conatus as used by seventeenth-century mechanists was, in fact, by no means essentially nonteleological" ("The Heyday," 191). This point is further developed by Sangiacomo, *L'essenza del Corpo. Spinoza e la scienza delle composizioni*, 151–87.

⁴On this basis, Manzini (*Spinoza: une lecture d'Aristote*) has discussed several affinities between Aristotle and Spinoza's views. Regarding the issue of teleology, however, Manzini focuses only on Spinoza's rejection of the Aristotelian motto, "nature does nothing in vain" (254–58).

⁵Moreover, Spinoza's intimate friend, Lodewijk Meyer, graduated under Heereboord's guidance at Leiden, and Heereboord himself was teaching there while Spinoza lived at Rijnsburg and arguably had frequent contact with the university milieu. For a portrait of Heereboord, see Krop, "Heereboord Adriaan (1614–1661)."

Heereboord is one of the primary and direct sources of Spinoza's acquaintance with the later scholastic tradition, and they often consider him the likely target for Spinoza's polemics against the scholastics.⁶ In this paper, I confirm this perspective by discussing Spinoza's critique of final causes, which has not yet received full-blown discussion in the treatment of Spinoza's relationship with Heereboord.

The second reason is methodological and depends on the state of the debate concerning Spinoza's critique (or endorsement) of teleology. Don Garrett has been among the first to argue that "although Spinoza maintains a certain rhetorical distance from the Aristotelian vocabulary of final causes, he fully and consistently accepts the legitimacy of many teleological explanations. . . . It is not Leibniz but Spinoza who holds the position on teleology and teleological explanation nearest to that of Aristotle."⁷ Garrett's paper has given rise to an intriguing debate.⁸ John Carriero has contested Garrett's reading by proposing a detailed comparison between Spinoza and Aquinas's views on final causality in order to support the anti-teleological reading of Spinoza's position.⁹ Paul Hoffman has contended that Carriero's comparison does not provide conclusive evidence.¹⁰ Jeffrey McDonough has proposed a qualified rejection of Garrett's position by maintaining that Spinoza's critique of final causes would be limited to the claim that "the natural development of creatures is explained by appeal to their intrinsic appetites for realizing their own specific, objective goods."¹¹ Valtteri Viljanen eventually joined Garrett's opponents by arguing that a teleological reading "does not square with Spinoza's basic ontological commitments. . . . In his system, things are what they are because their essences follow, with geometrical necessity, from God's nature. . . . Nothing Spinoza says suggests that he would see the 'following' from finite things' essences to be teleological any more than it is in God's case."¹² Viljanen has thus advanced his own interpretation in which the nature of the "following" should be understood in terms of *formal* causality. In Viljanen's view, such an account is "certainly not teleological in any Aristotelian sense."¹³

Surprisingly, none of the scholars who engaged in the above discussion provided a thorough reconstruction of Aristotle's own view on final causes. Although there seems to be a shared awareness that the way in which Aristotle conceived of final causes is significantly different from how medieval and later scholastics reframed that concept, vague labels such as 'scholastic Aristotelianism' are commonly

⁶See Wolfson, *The Philosophy of Spinoza*, 1:422–40; Di Vona, *Studi I and II*; Krop, "La scolastique évasive."

⁷Garrett, "Teleology in Spinoza," 311–12.

⁸Garrett's paper takes this position in a debate that has arisen between Bennett (*A Study of Spinoza's Ethics*), who has defended a strong anti-teleological reading, and Curley ("On Bennett's Spinoza: The Issue of Teleology"), who argued against it. Curley has already drawn attention to the need to focus on Spinoza's attack on final causes from a historical perspective by claiming that Spinoza's target should be identified with some kind of medieval or later scholastic account rather than with Aristotle's own view.

⁹Carriero, "Spinoza on Final Causality."

¹⁰Hoffman, "Final Causation in Spinoza." Lin ("Teleology and Human Action in Spinoza") and Steinberg ("Spinoza on Human Purposiveness and Mental Causation") have argued in detail against Bennett's anti-teleological reading of human motivation.

¹¹McDonough, "The Heyday," 183.

¹²Viljanen, *Geometry of Power*, 119–20.

¹³Viljanen, *Geometry of Power*, 128.

used to define the position that Spinoza would reject. Not less surprisingly, the scholastic view has been mostly conflated with that of Aquinas, which is a reference that proves to be fairly ambiguous because it can be exploited (as the debate between Carriero and Hoffman reveals) both to support and to dismiss the anti-teleological reading. As a result, the specific polemical target of Spinoza's critique of final causes remains underdetermined, and it is hardly possible to venture an interpretation of Spinoza's overall stance on teleology (either positive or negative) without having clarified the precise target of his criticism. In this paper, I argue that Spinoza's arguments in the Appendix are successful against Heereboord's rather than Aristotle's account of final causes.

The third reason to compare Spinoza's critique of final causes with Aristotle's and Heereboord's accounts is historical and concerns the significance of Spinoza's arguments in their broader cultural context. Heereboord was an influential professor at Leiden. He took an eclectic approach, combining a solid Aristotelian background (which he mastered under his predecessor, Franco Burgersdijk) with an open mind to new ideas found in Descartes's works.¹⁴ In the *Letter to the Curators* that introduces the *Meletemata*—a crucial document for the history of Dutch academic life in the mid-seventeenth century—Heereboord outlines this program and reconstructs the troubles that it caused him in terms of conflicts with other colleagues at Leiden (*Meletemata*, 1–20).¹⁵ Three points of Heereboord's program deserve our attention: 1) Aristotle's philosophy provides a legitimate and valuable starting point for university teachings; 2) scholastic philosophy represents a sort of degeneration of the Aristotelian philosophy and should be dismissed altogether (*Meletemata*, 5–6); and 3) Descartes's works provide insights that facilitate the development of a philosophical approach able to deal with "nature itself" and not just with past authorities.

These three claims might portray Heereboord as one of the most progressive representatives of the Dutch academic milieu at the time. However, a closer comparison between Aristotle's and Heereboord's views on final causes reveals a significantly different picture.¹⁶ In fact, Heereboord's position remains much more in line with that of the scholastic authorities, such as Suárez, or commentators, such as Arriaga, that he himself criticized.¹⁷ This suggests that the scholastic

¹⁴For an overview of Burgersdijk's thought, see Ruestow, *Physics at Leiden*, 14–33; Bos and Krop, *Franco Burgersdijk*; Krop, "Burgersdijk. Franck Pieterzoon (1590–1635)."

¹⁵The content of this *Letter* and Heereboord's relevance in the Dutch academic milieu is discussed in detail by Ruestow, *Physics at Leiden*, 34–60; Verbeek, *Dutch Early Reactions*, 34–40; Van Bunge, "Philosophy," 305–12; Nyden-Bullock, *Spinoza's Radical Cartesian Mind*, 10–13. Johannes De Raey (1620–1702), a pupil of Regius and Heereboord, also had a syncretic attitude toward Aristotle and Descartes; see Strazzoni, "La filosofia aristotelico-cartesiana di Johannes De Raey."

¹⁶The comparison that I will draw in the following corroborates the claim (Ruestow, *Physics at Leiden*, 12–13; Verbeek, *Dutch Early Reactions*, 7–9) that the feigned "return" to Aristotle advocated by several authors of the period remained in fact mediated by the later scholastic debate. For a reconstruction of the later scholastic debate on final causality, see Des Chene, *Physiologia*, 168–211.

¹⁷Heereboord used to list together Suárez and Arriaga (by adding other famous names such as the Conimbricenses and Eustachius a Sancto Paulo) as examples of the kind of scholastic authorities that should be dismissed (e.g. *Meletemata*, II, 189 and 220). Krop ("Natural Knowledge," 81–82) pointed out that Heereboord was arguably the last Leiden professor to be influenced by Suárez. Van Ruler ("Franco Petri Burgersdijk and the Case of Calvinism within the Neo-Scholastic Tradition")

approach to the issue of final causes was rooted enough to be upheld even by those authors who were more critical of that tradition and more open to embrace the new Cartesian philosophy. Arguably, this is the same group of people to whom Spinoza's *Ethics* was addressed.¹⁸

By arguing that Heereboord might have been a likely target of Spinoza's Appendix, this paper aims to clarify that the urgency we find in Spinoza's arguments against final causes does not depend on the need to counter an impersonal "Aristotelian-scholastic" tradition uniformly dominating the philosophical scene. Rather, Spinoza has to contrast how specific (later) scholastic authorities maintained their influence on the way in which crucial issues such as that of teleology were understood by his contemporaries. Scholastic positions appear dangerous to Spinoza insofar as they are still endorsed even by those authors who were publicly committed to fight them, "and struck deep roots in their minds" (G II.79/C III).

In the following, I begin with Aristotle's account of natural teleology and final causes (section 2) and then compare it with Heereboord's account (section 3). This reconstruction provides a more detailed background for assessing the polemical target of Spinoza's critique of final causes in the Appendix (section 4).

2. ARISTOTLE'S ACCOUNT OF UNTHOUGHTFUL TELEOLOGY AND FINAL CAUSES

In the first chapter of the second book of his *Physics*, Aristotle defines "natural" things as those entities that possess an internal principle of motion and rest:

Of things that exist, some exist by nature, some from other causes. By nature the animals and their parts exist, and the plants and the simple bodies (earth, fire, air, water)—for we say that these and the like exist by nature. // All the things mentioned plainly differ from things which are *not* constituted by nature. For each of them has within itself a principle of motion and of stationariness . . . which seems to indicate that nature is a principle or cause of being moved and of being at rest in that to which it belongs primarily, in virtue of itself and not accidentally. (*Physics* II.1, 192b8–23)¹⁹

Natural things are such that they have in themselves the cause of their changes, and the effects they produce tend to reproduce and actualize this inner principle.²⁰ In polemics with his predecessors (the Physicists), Aristotle intends to establish

discussed a similar issue concerning Burgersdijk's account of divine concurrence by demonstrating how it remained rooted in Suárez's views.

¹⁸The intended audience of the *Ethics* was arguably composed of middle-class, learned people, well trained in mathematics (G II.79/C III), sympathetic with the new science (E 2p13s), inclined to accept the substance/mode ontology introduced by Descartes (E 1def1–5), open to take a critical stance toward Descartes's own moral philosophy (E 3 Pref and E 5 Pref), and well aware of scholastic jargon and controversies (e.g. E 1p24c, E 1p29s, E 1p31s). On the intended audience of Spinoza's *Ethics*, see Matheron, "Pourquoi le *Tractatus de intellectus emendatione* est-il resté inachevé?"

¹⁹English translations of *Physics* II are taken from Aristotle, *The Complete Works*, 329–42.

²⁰It should be noted that in *Physics* VIII.4 Aristotle distinguishes between animals that are self-moving things in an active sense and natural elements that have an "internal" principle of change in the sense of having a *potential* to be moved in certain specific ways (*archē tou paskhein*, 255b31). Nussbaum (Aristotle's *De Motu Animalium*, 93–94) argued that Aristotle's account of teleology does not apply to natural elements. For an extensive criticism of this view and positive discussion of why it arguably does, see Johnson, *Aristotle on Teleology*, 131–58; and Scharle "Elemental Teleology."

that such an internal principle of natural things is indeed their *form*: “the form indeed is nature rather than the matter” (*Physics* II.1, 193b6–7).

Natural things act somehow in a circular way, that is, the principle of their action is also the *end* toward which these actions tend: “nature in the sense of a coming-to-be proceeds towards nature. For it is not like doctoring, which leads not to the art of doctoring but health” (*Physics* II.1, 193b12–14). As Diana Quarantotto convincingly points out,²¹ this definition of natural things as those entities that contain an inner principle of change, which is also the end toward which the thing’s effects tend, is the basis for understanding Aristotle’s notion of unthoughtful teleology, namely, the fact that the goal-directness of natural processes does not require intelligent final causes. Elemental teleology (e.g. stones falling down or fire rising upward) arguably provides a good example of unthoughtful teleology.²²

In *Physics* II.2, Aristotle presents the study of nature as the study of the four causes that determine natural phenomena. Among these causes, he stresses the relevance of the final cause:

[T]hat for the sake of which, or the end, belongs to the same department of knowledge as the means. But the nature is the end or that for the sake of which. For if a thing undergoes a continuous change toward some end, that last stage is actually that for the sake of which. (That is why the poet was carried away into making an absurd statement when he said ‘he has the end for the sake of which he was born.’ For not every stage that is last claims to be an end, but only that which is best.) (*Physics* II.2, 194a27–33)

In this passage, Aristotle expressly identifies the nature of a thing with the end or the final cause of its existence and functioning. While the effects brought about by artificial entities aim toward an end external to the thing itself, natural things operate in virtue of their own nature and tend to actualize it in the best possible way.

In natural things the nature, the form, the mover, and the final cause are not really or numerically distinguished in reality, although they can be distinguished from a conceptual point of view.²³ As Aristotle writes,

[T]he matter, the form, the mover, that for the sake of which. The last three often coincide; for the what and that for the sake of which are one, while the primary source of motion is the same in species as these. For man generates man—and so too, in general, with all things which cause movement by being themselves moved. (*Physics* II.7, 198a23–27)

Natural things are defined by an internal principle of change, which is their own form. This entails that natural things are moved by their form to actualize and

²¹Quarantotto, *Causa finale*.

²²See on this point Johnson, *Aristotle on Teleology*, 131–58; Scharle, “Elemental Teleology.” It is distinctive of Quarantotto’s reading to use the definition of “nature” provided by *Physics* II.1 to explain the meaning of teleological processes. However, several other scholars have subscribed to the more general claim, endorsed by Quarantotto and Scharle, according to which teleological processes are brought about through a kind of efficient causation *intrinsic* to the natural agents (see e.g. Gotthelf, “Aristotle’s Conception of Final Causality”; Meyer, “Aristotle, Teleology and Reduction,” Leunissen, *Explanation and Teleology*). Charles (“Teleological Causation”) has raised concerns on this point mainly on the basis of its consistency with other Aristotle’s writings. However, all the above-mentioned studies extensively address this problem.

²³This point has been further supported by Meyer, “Aristotle, Teleology and Reduction,” 805–12; and Leunissen, *Explanation and Teleology*, 11–16.

reproduce it either by generating individuals of the same kind (a man generates a man) or by preserving a given form in the same individual (a man operates to preserve his life). Aristotle adds that in natural things this process includes the final cause, which is that "for the sake of which" the thing is moved. Unlike products of art, natural things do not act for the purpose of achieving something different or external to their own form already in act, but just to reproduce it, and this is the "best" they can do. This entails that the final cause operates together with (in fact, is not numerically distinguished from) the formal and the efficient cause by orienting a process that starts from a given form already in act (either in the individual itself or in the cause that generates it), and tends to reproduce and maintain in act such a form. Natural teleology does not bring about unexpected effects, but rather conserves forms already actualized.

On this basis, Aristotle demonstrates in *Physics* II.8 that natural phenomena are always teleological and cannot be considered as happening by chance. As he explains in a very famous and debated passage,

[W]hy 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? (What is drawn up must cool, and what has been cooled must become water and descend, the result of this being that the corn grows.) Similarly if a man's crop is spoiled on the threshing-floor, the rain did not fall for the sake of this—in order that the crop might be spoiled—but that result just followed. . . . Such are the arguments (and others of the kind) which may cause difficulty on this point. Yet it is impossible that this should be the true view. For teeth and all other natural things either invariably or for the most part come about in a given way; but of not one of the results of chance or spontaneity is this true. . . . 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; and that such things are all due to nature even the champions of the theory which is before us would agree. Therefore action for an end is present in things which come to be and are by nature. (*Physics* II.8, 198b16–199a8)

The crucial reason to ascribe teleology to natural phenomena is that "spontaneous" (*Physics* II.4, 195b32) events are not regular, and regularity is a crucial characteristic of natural phenomena. Spontaneous events happen by chance because they are not produced by an inner principle but only by external causes. When a stone falls down and hits someone, we say that the stone hits that person "by chance" because it was not the purpose of the stone to do that (*Physics* II.5–6, 197a30–197b30). According to Aristotle, there might be an *indefinite* number of concurrent external causes necessary to explain why the stone hit that person in those circumstances.²⁴ This does not preclude that in general the stone can fall purposefully in the sense that it is embedded in the nature of the stone to fall. Nonetheless, Aristotle's point is that in the case of a spontaneous event the stone falls simply because it is so determined by an indeterminate number of external causes.²⁵ In fact, the stone

²⁴See *Physics* II.5, 196b 25–30: "[T]hat which by itself is a cause is determinate, but that which is a cause by virtue of concurrence is indeterminate; for an unlimited number of things may concur in the one."

²⁵See further discussion in Meyer, "Aristotle, Teleology and Reduction"; and Quarantotto, *Causa finale*, 47–79.

does not “invariably or for the most part” fall down with the purpose of hitting someone, but only when an indeterminate number of external causes conspire to produce the circumstances under which this can happen. In chapter 8, Aristotle stresses that should natural things act only by chance, it would be impossible to explain why they act in a regular way, “invariably or for the most part.”

Aristotle’s argument does not consist in dismissing the role that merely mechanical or efficient causes have in bringing about natural phenomena, but rather in showing that these causes are insufficient to account for natural regularities, unless by taking seriously into consideration the *ends* that natural things pursue.²⁶ To save the regularity of natural phenomena, Aristotle infers that “action for an end is present in things which come to be and are by nature.” Natural things act regularly because they have an inner principle of motion and rest, which is at the same time the end that they tend to actualize and reproduce. The nature or form of natural things is their final cause, the “for the sake of which” that determines why they operate “invariably or for the most part” in the same way.²⁷

The above passage has raised a wide debate concerning both the exact polemical target of Aristotle’s discussion and the account of teleology resulting from his answer. For present purposes, it is sufficient to focus on two points that appear to be uncontroversial enough. First, Aristotle’s text does not provide conclusive evidence for an *anthropocentric* account of teleology, contrary to what the example of the rain aiming at growing the corn might suggest.²⁸ The universal premise of Aristotle’s argument is that “all . . . natural things either invariably or for the most part come about in a given way.” His inference consists in arguing that, insofar as natural phenomena show regularity, they must be “due to nature” in the sense of being teleological. Aristotle is in no way committed to explain *how* this is the case or *which* ends different natural things have. However, his position entails that natural teleology in a given entity must be explained by referring to the nature of that very thing, since teleological processes are produced by an *internal* principle (contrary to chance events produced by external causes).²⁹ Accordingly, there is no need to assume that teleological processes are such only insofar as they contribute to specific *human* ends.

²⁶This point has been extensively discussed by Meyer, “Aristotle, Teleology and Reduction,” and further developed by Leunissen, *Explanation and Teleology*. For a concurrent interpretation, cf. Gotthelf, *Teleology, First Principles, and Scientific Method in Aristotle’s Biology*.

²⁷Des Chene (*Physiologia*, 178–86) discusses how early modern commentators integrated Aristotle’s original argument in order to show why efficient causes cannot produce the complex and well-coordinated effects we find in nature without being ruled by final causes.

²⁸In *Politics* 1.8 (1256b10–22), Aristotle argues that nature has made all animals for the sake of man. This passage has been sometimes used to support the view that Aristotle is ultimately committed to a kind of anthropocentric teleology, which would be at work even in the *Physics* (see e.g. Sedley, “Is Aristotle’s Teleology Anthropocentric?”). Arguments to resist such a reading have been offered e.g. by Wardy, “Aristotelian Rainfall or the Lore of Averages”; Judson, “Aristotelian Teleology”; Johnson *Aristotle on Teleology*; Scharle “Elemental Teleology”; and Leunissen, *Explanation and Teleology*. It is worth noting that “anthropocentric” teleology consists in claiming that natural things would be “for the sake” of human wellbeing. Yet, “anthropocentric” teleology is not necessarily “thoughtful” teleology. Ascribing “anthropocentric” teleology to Aristotle would not commit him to dismissing unthoughtful teleology.

²⁹Quarantotto (*Causa finale*, 81–108) and Scharle (“Elemental Teleology”) have provided thorough discussion of this inference.

Second, Aristotle rejects the possibility that acting for an end must always require an intelligent final cause, that is, a cause understood on the basis of the model provided by human intentionality. According to Aristotle, such an assumption is misleading:

[I]t is absurd to suppose that purpose is not present because we do not observe the agent deliberating. Art does not deliberate. If the ship-building art were in the wood, it would produce the same results by nature. If, therefore, purpose is present in art, it is present also in nature. The best illustration is a doctor doctoring himself: nature is like that. It is plain then that nature is a cause, a cause that operates for a purpose. (*Physics* II.8, 199b27–33)

According to Aristotle, it is “absurd” to pretend that human intentionality must provide the ultimate model to understand natural teleology. The critical difference between natural and artificial teleology does not concern deliberation, but rather whether the principle of change is internal (as in natural things) or external (as in products of art) to the process. For instance, shipbuilding exemplifies an *artificial* kind of teleology because the principle of change that rules the productions of this art is external to wood in such a way that a piece of wood does not tend by its own nature or form to become a ship. However, the teleological nature of shipbuilding does not depend on the fact that this art relies on human deliberation, but only on the fact that its products actualize a certain form.

Should deliberation be a necessary condition for having teleological processes, we would have to admit that only agents endowed with the capacity for rational deliberation could act in a teleological way. Aristotle dismisses this possibility by arguing that rational deliberation is not always required even in the case of teleological actions produced by human beings. He stresses that “art does not deliberate,” seemingly by referring to the fact that deliberation takes place only concerning those actions whose outcome is *not* certain, necessary or already settled. Several arts are ruled by a strict set of norms (e.g. orthography) in which the production of some effect is not the result of any individual deliberation in Aristotle’s sense, but rather of well-defined procedures.³⁰ If rational deliberation is not always necessary, even in human teleological actions, it must not be necessary a fortiori for natural things. The kind of thoughtful teleology expressed by human beings able to deliberate about their ends is nothing but a subset of a broader category of teleological events that can be completely unthoughtful.

3. HEEREBOORD ON FINAL CAUSES

Although it is far beyond the limits of this paper to reconstruct the history of the reception of Aristotle’s account of unthoughtful teleology, it is safe to maintain that the great majority of the later scholastic commentators on Aristotle tend to take issue with this concept.³¹ For present purposes, I will focus on how Heereboord remains committed to this later scholastic approach.

³⁰See *Nicomachean Ethics*, III.3, 1112b, 43. On this point, see Broadie, “Nature and Craft in Aristotelian Teleology,” 398.

³¹Pasnau, “Intentionality and Final Causes” suggests that Avicenna, not less than Aristotle, was an influential source for medieval accounts of teleology. On this point see also White, “Medieval theories of Causation.” Johnson (*Aristotle on Teleology*, 15–39) has stressed that the medieval account originated

In his *Meletemata Philosophica*, Heereboord devotes two disputations to the notion of final cause (vol. II, disps. 23 and 24).³² Therein he presents the final cause as essentially based on the model provided by intentional human teleology. Heereboord defines the “end” as “the external cause [*causam externam*], because of which (or in virtue of which) a thing is; or, in other words, the cause that determines the efficient cause to act, and thus to bring about its own effect” (*Meletemata* II, disp. 23, 264).³³ While Aristotle admits that, in natural things at least, the end coincides with the nature or form itself of the thing, Heereboord explicitly states that the end is always an “external cause” acting on the thing itself and different from its efficient cause. Indeed, he later clarifies that “the end, which moves, is offered to us as something that we must achieve” (*Meletemata* II, disp. 23, 265),³⁴ which means that the thing acting to achieve the end actually lacks what it is seeking to achieve.

This definition of the end as an *external* principle of change cannot be underestimated. In his *Philosophia naturalis, rationalis, moralis* (Leiden, 1654) Heereboord presents the same claim in the context of a series of disputations explicitly inspired by Aristotelian physics,³⁵ and this might give the impression that his definition of the final cause as an external principle derives from Aristotle. Although Aristotle admits in the *Metaphysics* that there might be a kind of “passive” potentiality that requires an external cause to be brought to actuality,³⁶ in no way does he identify the final cause with such an external principle altogether. Rather, Heereboord’s definition is an almost literal quotation of Burgerdijk’s own definition of final cause: “the end is an external cause [*finis est causa externa*], in virtue of which the thing is, that is, the cause which, by its desire and love, incites the efficient cause to act and to bring about its own effect” (Burgersdijk, *Institutionum*, ch. XVII, sect. 1, 180).³⁷ This definition is distilled from a much more nuanced discussion summarized by Suárez, who explains,

Causes are first be divided into internal and external. The internal in turn [can be divided] into matter and form, concerning which it cannot be doubted that they agree in particular in their mode of causing. For they give being to the effect by bestowing on it their very own entity in number and by internally constituting it. The efficient cause and end, however, cause in a very different way and they agree in that they do not intrinsically compose the effect. Therefore, they are commonly called extrinsic causes. (*DM* 12.3.19)³⁸

in fact with the Neoplatonic attempt to combine Aristotle’s and Plato’s views and then to integrate this Neoplatonic synthesis into a theocentric (Islamic or Christian) philosophy.

³²All translations from Heereboord’s *Meletemata* are mine.

³³*Finem definimus, Causam externam, propter quam seu cujus gratia res est: vel, qua causam efficientem impellit ad agendum, adeoque ad consecutionem sui.*

³⁴*Finis, qui movet, proponitur nobis, ut aquirendus.*

³⁵See Heereboord *Philosophia naturalis*, I, sect. 15–16, 2: [15.] *Principia essendi sunt, quae ad ipsum esse corporum naturalium concurrunt.—Ad ipsum esse, scilicet, vel producendum vel constituendum.* [16.] *Suntque vel externa, scil. Efficiens et Finis, vel interna.—Principia externa dicuntur, quae corpus naturale non ingrediuntur, illud constituendo; interna, contra.*

³⁶See Aristotle, *Metaphysics* IX.8, 1049b5.

³⁷My translation of *finis est causa externa, cujus gratia res est, id est, quae sui desiderio ac amore incitat causam efficientem ad agendum, et ad consecutionem sui.*

³⁸O 25:394, translation by Sydney Penner (<http://www.sydneypenner.ca/SuarTr.shtml>), adapted by myself: *Primo causa dividi in internam et externam; interna rursus in materiam et formam; de quibus dubitari non potest quin peculiariter conveniant in modo causandi; dant enim esse effectui conferendo illi suamet numero*

For present purposes, it must be stressed that Heereboord's use of the definition of final cause as an "external" cause is germane to his use of the case of human intentionality as the paradigm to understand final causation. This creates conceptual pressure on Aristotle's distinction between natural teleology ruled by an *internal* principle of change and artificial teleology based on an *external* principle. As a result, in Heereboord's account, final causes turn out to operate only on the model provided by what Aristotle considered to be artificial teleology, and specifically tailored to the case of human intentionality. This general attitude is confirmed by the development of Heereboord's discussion.

Heereboord admits that the final cause produces its effect by operating as a *good* toward which the caused thing tends. Aristotle agreed on the fact that a true final cause exercises its causality as a *good*. Nonetheless, Heereboord's way of restating this claim stresses that *knowing* that good is a *conditio sine qua non* (*Meletemata* II, disp. 23, 265) for exercising final causality. Following Suárez and Burgersdijk³⁹ once again, Heereboord states, "For final causality it is necessary that the end and its goodness be known" (*Meletemata* II, disp. 23, 265).⁴⁰

Because the final cause is external and acts by determining a certain agent to achieve it, the final cause does not properly exist in the act before the (chronological) end of the process.⁴¹ For this reason, Heereboord underlines that the way in which a final cause *moves* the agent cannot be a kind of physical motion:

[W]hen the end is proposed to the agent as good, it excites a desire for it in the agent and attracts the agent toward it. It is said to move the agent metaphorically, not because that motion is not a true motion, or because it is not real, but rather because it is not physical. For that which is a being in potency cannot bring about a physical action, because physical movement is produced by an actually moving existing thing. Therefore, because the action with which the end moves is an entity that exists in

entitatem et interne componendo illum; efficiens autem et finis longe aliter causant, et in hoc conveniunt, quod non componunt intrinsece effectum, et ideo causae extrinsecae communiter appellantur. According to Zabarella (*In Libros Aristotelis Physicorum Commentarii*, Ph. I.1, 6–7), this distinction derives from Simplicius and the debate among the ancient commentators regarding the difference between "principles," "causes," and "elements." According to Zabarella, the reason to define final and efficient causes as "external" was in order to grant them the status of "proper" causes; see Zabarella, *In Libros Aristotelis Physicorum Commentarii*, 7: [*P*]ropriè loquendo solae causae externae merentur appellari causae; internae vero non, quia cum in ipsa re sint, non videntur ab ea differre. Aquinas mentions this distinction in his *De Principiis Naturae*, sect. 20, although his ultimate view is *not* that final causes are external principles altogether (cf. n. 62 below). After Heereboord, Martin Schoock (*Physica Generalis*, disp. 5, sect. 10, 137) will maintain the same definition of end as an external principle on the basis of a reference to Aristotle's *Posterior Analytics*, II.11. However, in Aristotle's original text there is no trace of such a definition.

³⁹See Burgersdijk, *Institutionum*, ch. XVII, sect. 4, 182: [*E*]sse intelligibile sive cognitio finis, necessaria conditio est ad exercendam causalitatem finalem; Suárez, *DM* 23.1.11, in *O* 25:846: [*F*]inem influere quando non est in re, sed tantum in apprehensione seu cognitione.

⁴⁰*Ad causalitatem finale necessarium est, ut finis ejusque bonitas cognoscatur.*

⁴¹In order to explain how it is possible that the end exists in the agent as "known" but at the same time acts on him as an external principle, Suárez introduced the distinction (that can be traced back to Aristotle's *De Anima* II.4, 415b1–3) between *finis cujus* and *finis cui* ("intended state" and "beneficiary," to use the terminology adopted by Des Chene, *Physiologia*, 172). While the *finis cui* exists in the agent as a known good, the *finis cujus* acts on him from the outside and does not exist in action before the achievement of the whole causal process (*DM* 23.1.11, in *O* 25:846). See further discussion in Åkerlund, *Nisi temere agat*, 57–61. The same distinction is reproduced by Burgersdijk, *Institutionum*, ch. XVII, sect. 8, 185; and Arriaga, *Cursus Philosophicus*, disp. 8, sect. 5, 312.

potency, it cannot be physical, and for this reason it is called metaphorical. However, this metaphorical movement must be understood in a secondary act, i.e. as the way in which the will is actually moved, from which it follows that this motion is, at the same time, both the causality of the end and the effect of the will. (*Meletemata* II, disp. 23, 265)⁴²

Since that final state initially exists only as a potentiality, the final cause cannot also be the actual efficient mover and thus it cannot move as an efficient cause. Rather, the right model to understand how final causes work is provided by the case of human will, in which the end moves as an object of desire. Accordingly, the teleological process is articulated in three steps: *first*, the end (i.e. the final cause) is known as a good; *then*, this knowledge moves the thing “metaphorically”⁴³ toward the acquisition of such a good (which the thing actually lacks), in the same way in which the object of desire moves the will to achieve it; *finally*, the thing achieves its end through the efficient process that has been ruled by the final cause. This view is consistent with Heereboord’s claim that the *cognition* of the goal must precede its actualization—in fact, only if I know what I desire to achieve can I operate to achieve such a goal—and with the fact that the final cause does not move as an efficient mover but rules the efficient process only by orienting it toward the good.

The obvious objection to this view is that such an account of final causality seems to apply only to human or intelligent agents. Heereboord devotes the whole disputation 24 to clarify that “all agents, of any kind, act for an end, but not in the same way” (*Meletemata* II, disp. 24, 267).⁴⁴ He replies to this objection when he considers natural things that lack any capacity for thinking:

But for natural things, both inanimate things and plants, knowing their end is not a given; therefore, they do not act for an end. Answer: It is true that in these things themselves there is no cognition of the end. Nevertheless, they do not act without a preliminary, indeed a most perfect, cognition of the end, which, to the extent that it does not originate from them, originates from the most perfect Being, by whom they are directed. For insofar as natural things act because of an end, they tend to that end prescribed for them by God, in virtue of the order and direction of the Supreme Divinity. (*Meletemata* II, disp. 24, 267)⁴⁵

Heereboord’s commitments to the principle according to which the “cognition of the end” is a *sine qua non* condition to have proper final causality lead him to accept the idea that natural agents cannot act in a teleological way by themselves (*pace*

⁴² [Q]uando finis, sub ratione boni propositus agenti, desiderium sui in illo excitat, atque ad se agentem allicit, dicitur agentem movere metaphorice, non quia illa motio non sit vera motio aut non sit realis sed quia non est physica: quod enim est ens in potentia, id actionem physicam edere nequit, motus enim physicus fit a movente actu existente; ideoque actio, qua movet finis, cum sit entis existentis in potentia, non potest esse physica, atque ob eam causam dicitur metaphorica. Debet vero haec motio metaphorica intelligi in actu secundo, i.e. ita ut voluntas actu moveatur: ex quo sequitur, quod haec motio simul sit et causalitatis finis et effectum voluntatis.

⁴³ The same expression, ‘metaphorical motion,’ is used by Burgersdijk, *Institutionum*, ch. XVII, sect. 5, 183; and Suárez, *DM* 23.4.8, in O 25:861. This expression was widely used in scholastic disputations and commentaries: Des Chene, *Physiologia*, 189–90.

⁴⁴ *Omnia agentia, quaecunque tandem, agunt propter finem, sed non eodem modo.*

⁴⁵ *At rebus naturalibus, tum inanimatis, tum plantis, finem suum cognoscere, non est datum. Ergo non agunt propter finem. R. Verum est, in iis rebus ipsis nullam esse cognitionem finis, non tamen agunt sine praevia, immo perfectissima, cognitione finis, quae, utcumque non proficiscatur ab ipsis, proficiscatur tamen ab ente perfectissimo, a quo diriguntur: hactenus enim res naturales propter finem agunt, quatenus ad finem a Deo sibi praefixum tendunt, ex Supremi Numinis ordinatione ac directione.*

Aristotle), but only insofar as this cognition is supplied by God.⁴⁶ This view is fully consistent with Heereboord's claim that the final cause is *external* and operates as the *good* toward which natural things tend. In fact, God does not only establish the specific finality of natural things but he himself represents their ultimate good or goal. Suárez explicitly states, "[I]nsofar as these actions are from natural agents, there is no proper final causality [*propria causalitas finalis*] in them, but only a habitude to achieve a certain end. Rather, insofar as they are from God, there is final causality in them just as in other external and transient actions of God" (*DM* 23.10.6).⁴⁷ Heereboord's position entails the same conclusion.

Nonetheless, this discussion raises the further issue of whether and in which sense God can be said to act in a teleological way. According to Heereboord, the right way to understand this point is the following:

God has made everything on account of himself: for since these external actions place a certain distinct reality [*entitatem*] in creatures, different from the divine essence, they must have an efficient cause and therefore also an end. . . . Hence, final causality with regard to God's actions and external effects (as they say) consists in the fact that he produces an effect outside himself by the love of his own goodness. This must be understood as follows: God created everything on account of himself; indeed, God made everything for the sake of something, but outside God nothing existed; <there was> only God; therefore God made everything on account of himself, but not in <the sense> that he needed those things that he made . . . , but such that he communicated his own goodness to these things. The scholastics stated it this way: God made everything for an end, not out of need, but of <a desire for> assimilation [*Deus Omnia fecit propter finem, non indigentiae, sed assimilationis*]. (*Meletemata* II, disp. 24, 268–69)⁴⁸

Because creatures have an ontological reality different from that of God, their creation is the result of the transeunt (rather than immanent) action of God. Insofar as creatures have reality (*entitatem*), they must have an efficient *and* a final cause (since the final cause is required to direct the efficient cause). Contrary to what happens with finite things, the end that explains why God creates does not consist in the fact that God *lacked* something (which would be an "end of indigence"), but rather in the fact that he wanted to communicate his own goodness to his creatures (which is an "end of assimilation").⁴⁹

⁴⁶Des Chene (*Physiologia*, 194–200) provides evidence that this was a standard position in later scholasticism. For present purposes, see Arriaga, *Cursus Philosophicus*, disp. 8 sect. 6, 315; and Burgersdijk, *Institutionum*, ch. XVII, 183: [*Inquam ego, omnia nihilominus agunt propter finem, sed non omnia eodem modo. . . . Res inanimae diriguntur in fines suos a generante, aut a primo motore, ideoque moventur a fine ad media, quibus ad finem eundem est, non sua, sed primi motoris cognitione atque appetitione interveniente.*]

⁴⁷O 25:887, my translation: [*Ita fit ut in his actionibus, ut sunt a naturalibus agentibus, non sit propria causalitas finalis, sed solum habitudo ad certum terminum; ut vero sunt a Deo, ita sit in illis causalitas finalis sicut in aliis externis et transeuntibus actionibus Dei.* The same view is echoed by Schoock, *Physica Generalis*, disp. 5, sect. 13, 139.

⁴⁸*Deus fecisse omnia propter semetipsum: nam cum actiones hae externae ponant distinctam aliquam entitatem in creaturis, diversam ab essentia divina, necesse est, ut efficientem causam habeant, proinde et finem. . . . Causalitas ergo finis in Deo respectu actionum et effectuum ad extra, ut loquuntur, consistit in eo, quod amore suae bonitatis effectum producat extra se. Et hoc sensu capiendum est hoc; Deus omnia fecit propter se: Nam Deus omnia fecit propter aliquid: atqui extra Deum nihil erat, nisi ipse: fecit ergo Omnia propter se, non quod istis, quae fecit, indigeret. . . . sed ut rebus istis, quas fecit, suam bonitatem impertiret: quod Scholastici enunciarunt hoc modo; Deus Omnia fecit propter finem, non indigentiae, sed assimilationis.*

⁴⁹See Burgersdijk, *Institutionum*, ch. 27, sect. 4, 183: *Deus etiam agit propter finem, sed finis Dei non est bonum quod consequitur, sed quod vult communicare*; Suárez, *DM* 24.1.7 and 24.2.5 and 8; Aquinas, *Summa Contra Gentiles* I, ch. 72, sect. 9, and II, ch. 35, sect. 7.

To summarize, one of the crucial tasks of the second book of Aristotle's *Physics* is to establish that natural things are ruled by unthoughtful teleology, according to which their own nature or form is both the internal principle of change and the end that determines the regularity of natural processes. Heereboord (following the steps of his predecessor Burgersdijk, commentators such as Arriaga, and a scholastic authority like Suárez) abandons the idea of unthoughtful teleology. Since the cognition of the end is a necessary condition for final causality, only an intelligent agent can act as a final cause. Thus, in the case of unintelligent natural beings, it must be God who providentially directs them toward the good (and toward himself as the ultimate good).

4. SPINOZA'S CRITIQUE OF FINAL CAUSES

In this section, I reconstruct Spinoza's arguments against final causes as they appear in the Appendix to the first part of the *Ethics*. My aim is to show that they successfully target an account of final causes closer to that presented by Heereboord rather than by Aristotle.

Spinoza's main goal in the Appendix is to take issue with the anthropomorphic idea of God, which sharply contrasts with his own account of God as the only infinite substance. Spinoza argues that this anthropomorphic idea is the result of a more fundamental prejudice that concerns teleology. His strategy consists of three steps: 1) explain the roots of this prejudice and how it generates the anthropomorphic notion of God; 2) show that this prejudice is misleading and based on a false understanding of nature; and 3) explain how other prejudices concerning moral values derive from the first one. For present purposes, I focus on the first and second steps only.

(1) Spinoza expressly admits the existence of teleological events in nature. Human beings provide a glaring instance:

[M]en act always on account of an end, namely, on account of their advantage, which they want. Hence they seek to know only the final causes of what has been done, and when they have heard them, they are satisfied, because they have no reason to doubt further. But if they cannot hear them from another, nothing remains for them but to turn toward themselves, and reflect on the ends by which they are usually determined to do such things; so they necessarily judge the temperament of the other from their own temperament. (G II.78/C 110)

Human beings have a teleological nature that essentially determines all their behaviors. What goes wrong with human teleology is that humans are so dominated by their desires that they primarily seek to know only the *final* cause of every event. However, since Spinoza assumes that "all men are born ignorant of the causes of things" (G II.78/C.110), he concludes that humans simply project their own ends onto nature because they are unable to explain the final causes of *other* natural things. Knowing that some natural things are advantageous and not knowing the real (final) causes of several natural things, human beings are led to infer that *every* natural thing has been designed for its *own* advantage. This produces a first illusion, namely, the *anthropocentric* belief that nature has been designed for humanity's sake.

However, in order to explain why nature is designed for humanity's sake, the anthropocentric illusion requires fabricating anthropomorphic gods (G II.78/C 110). Once this later idea has been forged, humans apply once again the same mechanism that fills the lack of adequate knowledge with fictitious projections based on their own knowledge of human nature. As a result, humans imagine gods in a human fashion, that is, as acting on the basis of free will and always for an end (G II.79/C 110–11). Natural events contrary to human purposes (or simply indifferent to them) challenge the assumption that everything in nature has been designed for human purposes. However, once the desire to believe in the anthropocentric worldview is rooted deeply enough, humans must invent *ad hoc* explanations to justify these counterexamples or, at least, admit that they cannot be explained at all. This is the point of no return beyond which the (anthropocentric) teleological prejudice becomes true superstition (G II.79/C 111).

This genealogy is not yet an attack on teleology as such, but rather a reconstruction of the psychological process that leads from the *desire* to believe that the whole of nature has been designed for humanity's sake to the belief in an anthropomorphic God that legitimizes such a desire. In fact, Spinoza explicitly claims that certain natural entities (i.e. human beings) act teleologically, and then exploits this remark as a premise to account for the origin of superstition. Moreover, the fact that human beings do not know the ends that determine other natural entities does not mean that these other natural entities cannot have their own ends. Nothing of what Spinoza demonstrates in the first part of the *Ethics* prevents natural things from acting according to the ends embedded in their own nature or essence. Spinoza's genealogy is specifically meant to debunk the anthropomorphic image of God by showing how it depends on the human desires to seek "final causes." Accordingly, the polemical target of Spinoza's genealogy is represented by those who defend the image of an anthropomorphic God as the ultimate source of natural teleology.

Since Aristotle obviously does not hold any anthropomorphic account of God as the *creator* of natural things, his view of natural teleology is not an appropriate target. Moreover, the way in which Spinoza rephrases the Aristotelian slogan, "Nature does nothing in vain (*i.e. nothing not of use to men*)" (G II.79/C 111, emphasis added), suggests that Spinoza's genealogy targets the belief in an *anthropocentric* teleology, while Aristotle maintains that natural things act for *their own* ends rather than for humanity's sake.⁵⁰

⁵⁰Scribano (*Guida alla lettura*, 47–48) contends that Aristotle's idea of natural regularity, although not anthropocentric, would still fall under Spinoza's attack on the notion of "order" in nature, which Spinoza presents in the Appendix as one of the products of the anthropocentric teleological prejudice (G II.82/C 113). I grant that Spinoza takes issue with the idea of considering as "well-ordered" those things that human beings can more easily remember or imagine. However, Spinoza himself does not dismiss the notion of order altogether. In crucial passages throughout *Ethics*, Spinoza often refers to the "order of the whole of Nature, or the connection of causes" (E 2p7s); or to the "the common order of Nature" (E 2p29s). In these contexts, Spinoza understands "order" as the result of the network of causes operating in the whole of Nature. Surely, Spinoza maintains that the (real) order of Nature cannot be determined on the basis of human imagination and appetites. Yet, Spinoza nowhere denies that there are regularities in Nature, and his frequent references to the "laws of Nature" (e.g. in E 1p17; E 3 Pref; E 3p2s; E 4p2dem; E 4p19; E 4 Ap. ch. 6) rather suggest that he conceives of natural processes as ruled by fixed "laws and rules" (*leges et regulae*, E 3 Pref). On this point, I do not see any substantial disagreement between Spinoza's view and the kind of natural regularity described by Aristotle.

On the contrary, Heereboord exploits an anthropomorphic account of God (who creates natural things for the sake of sharing his own goodness with them) in order to explain how natural things can act teleologically. Although Heereboord does not explicitly defend the view that everything in nature has been designed for humanity's sake, his position can be seen as a shortened discussion of Suárez's original treatment of this issue, and Suárez explicitly claims that if God is the source of teleology in nature, he must have ordered the ends of natural things on a scale of growing perfection, according to which the whole of nature must operate for the sake of human flourishing. As Suárez states, "God ordered the singular things to contribute to the beauty of the universe, and he created plants and animals for mankind" (*DM* 24.2.10).⁵¹ This view is exactly what Spinoza complains about: "God himself directs all things to some certain end, for they say that God has made all things for man, and man that he might worship God" (*G* II.78/*C* 110).

(2) Spinoza provides three arguments to show that the anthropocentric teleological prejudice is misleading. The first argument is based on his claim for necessitarianism:

[N]ot many words will be required now to show that Nature has no end set before it, and that all final causes are nothing but human fictions. For I believe I have already sufficiently established it, both by the foundations and causes from which I have shown this prejudice to have had its origin, and also by P16, P32C1, and C2, and all those [propositions] by which I have shown that all things proceed by a certain eternal necessity of Nature, and with the greatest perfection. (*G* II.80/*C* 111–12)

It seems safe to assume that when Spinoza claims that "[n]ature has no end set before it, and that all final causes are nothing but human fictions," he is referring to the discussion of ends and final causes he has just provided. As Curley has pointed out,⁵² rather than taking this sentence as an unqualified attack on *any* possible account of teleology, we should read it in its own context and check which specific account of final causality is undermined by the arguments that Spinoza immediately provides to support such a statement.

E 1p16 establishes that infinitely many things follow from an infinite substance, and *E* 1p32c1 and c2 state that the way in which things follow from God does not depend on God's arbitrary choice but on the necessity of God's nature itself. These propositions are supposed to rule out the claim that God freely decided to design nature for the sake of humans. In fact, things do not follow from God's nature *because* God has any particular care for human beings, but rather because the nature of an infinite substance entails that infinitely many things must follow from it (*E* 1p16dem).

Spinoza's genealogy has shown that the belief in God's design is a necessary assumption to maintain the anthropocentric illusion that nature has been created for humanity's sake. Spinoza's claim for necessitarianism proves that this

⁵¹O 25:896, my translation: [*R*]es singulas Deus ordinavit ad pulchritudinem universi, et herbas et animalia condidit propter hominem. The same view is echoed by Schoock, *Physica Generalis*, disp. 5, sect. 12, 139: [*V*]elut centrum quod naturae, occurrit homo, cui omnes aliae res naturales aptae sunt inservire. For further discussion of how this view was upheld by important Dutch anti-Cartesians such as Voetius and Schoock, see van Ruler, *The Crisis of Causality*, 88–105.

⁵²Curley, "On Bennett's Spinoza," 40–41.

anthropomorphic idea of God is illegitimate because God cannot act on the basis of free intentional choice. By uncovering this inconsistency at the base of the anthropomorphic idea of God, Spinoza's argument attacks what his genealogy has proved to be the necessary premise required to hold the anthropocentric account of teleology.

Spinoza's argument undermines Heereboord's view, which is crucially based on the claim that God is the ultimate source of final causality in nature, and acts on the basis of a (freely deliberated) providential plan. In fact, inanimate things can act according to their ends only because God designed and directs them. However, Spinoza's argument has no effect on Aristotle's account of *unthoughtful* teleology, which does not rely on any appeal to God's teleological design of nature. Rather, Aristotle reminds us that "it is absurd to suppose that purpose is not present because we do not observe the agent deliberating" (*Physics* II.8, 199b27). Natural teleology is unthoughtful because it is not directed by a rational (divine) plan, but by the inner nature or form of the natural things themselves.

The second argument used by Spinoza concerns the explanatory confusion introduced by the anthropocentric teleological prejudice:

[T]his doctrine concerning the end turns Nature completely upside down. For [1] what is really a cause, it considers as an effect, and conversely. What is by nature prior, it makes posterior. And finally, [2] what is supreme and most perfect, it makes imperfect. For (to pass over the first two, since they are manifest through themselves) as has been established in PP21–23, that effect is most perfect which is produced immediately by God, and the more something requires several intermediate causes to produce it, the more imperfect it is. (G II.80/C 112, numbers in brackets added to help discussion)

Consider the first point, (1). This argument takes issue with a reversal of the right causal order between cause and effect that "the doctrine of the end" would introduce. We must assume that this argument applies only to the kind of *final* causes that Spinoza intends to criticize in the Appendix since nowhere in the *Ethics* does Spinoza claim that an appeal to, say, *efficient* causes would produce the same mistake. Accordingly, the argument presupposes that those final causes it aims to reject work differently (and are really distinguished) from efficient causes.

This entails that such an argument cannot be used against Aristotle, who claims that in natural processes the efficient, the formal, and the final cause "often coincide" (*Physics* II.7, 198a25). Aristotle cannot be charged for admitting a kind of final cause that reverses the order followed by the efficient cause because he expressly claims that the two are not numerically distinct, and thus they must operate by following the same causal order. Nonetheless, Spinoza's criticism is pertinent in the case of Heereboord, who maintains that final causes work in a fundamentally different way from efficient causes. According to Heereboord, a final cause (unlike an efficient cause) moves only "metaphorically," in the sense that the knowledge of a good moves the desire to achieve such a good. This order between the final cause (i.e. the knowledge of the good) and its effect (i.e. the desire to achieve the good) matches the way in which (in Spinoza's genealogy of the teleological prejudice) human beings judge their own wellbeing (i.e. what they judge to be good for their preservation) as the *final cause* that explains the

existence and the use of natural things for human purposes (G II.78–79/C 110). However, as Spinoza argues, in reality human beings judge that everything in nature is designed for them just because of their desire to thrive. The correct causal order entails that the judgment concerning the good is the *effect* of desire (E 3p9s) rather than its final cause. From this point of view, both the teleological prejudice discussed in the Appendix and Heereboord's account of final causes "turn Nature completely upside down" (G II.80/C 112).

Aristotle, on the contrary, would subscribe to Spinoza's view (see E 3p9s), since his account of unthoughtful teleology does not consider the *knowledge* of the good as a requirement for a final cause to work. Rather, he maintains that what is good for a natural thing has to be defined on the basis of the purposes that its own nature or form causes it to pursue.⁵³ From this point of view, Aristotle grants that what is prior in the causal process is the thing's own nature, and a certain end is good for that thing because it is the best possible actualization of its own form.⁵⁴

The second point (2) in the quote above introduces a more specific kind of reversal of the natural order between what is more and less perfect. Spinoza's argument presupposes that the final cause is the ultimate *external* end that the thing is supposed to achieve. In this view, only the ultimate achievement of the end is the most perfect state. Since the goal is external, insofar as the thing strives to achieve the goal, it is actually lacking it. If we apply this reasoning to God, Spinoza's argument goes, we must conclude that the most remote effects produced by God are also his ultimate goals, and the more immediate effects produced by him are nothing but instruments to achieve the former. However, this obviously contradicts Spinoza's own ontology, according to which the most immediate effects following from God's attributes are *infinite* modes, which are by definition more perfect than the finite things resulting from them (E 1p21–22).

Spinoza's argument presupposes that *if* the end is external, and God acts for an end, then God acts for ends *external* to his own nature. This would imply that God lacks something, which contradicts God's own perfection. Spinoza argues, "[F]or if God acts for the sake of an end, he necessarily wants something which he lacks. And though the theologians and metaphysicians distinguish between an end of need and an end of assimilation [*finem indigentiae et finem assimilationis*], they nevertheless confess that God did all things for his own sake, not for the sake of the things to be created" (G II.80/C 112). In this way, Spinoza uncovers a significant tension between the definition of end as an "external" cause and the implementation of this concept with respect to God. Spinoza eagerly claims that the scholastic distinction between "end of indigence and end of assimilation" (invoked by Heereboord) is unable to resolve this tension and can only (at best) reinforce the idea that the notion of end as extrinsic cause cannot be applied to God. Once again, Aristotle is not significantly touched by this discussion, since he does not conceive of the (natural) end as external to the nature of the thing

⁵³See *Nicomachean Ethics*, I.1 1094a.

⁵⁴Konstan (*The Emotions*) has extensively developed this point. Moreover, Aristotle scholars agree that he did not conceive of final causes as acting backward from the future to the present (see e.g. Johnson, *Aristotle on Teleology*, 56; and Leunissen, *Explanation and Teleology*, 176–206).

acting for that end, and surely does not consider God as the creator, but rather as the unmoved mover acting as an end in itself.⁵⁵

The third argument is based on what Spinoza ironically labels a "reduction to ignorance," according to which God's teleological design is inferred as an *ultima ratio* explanation in order to account for phenomena that humans are not able to explain in other ways. Spinoza provides three examples of the use of this argument:

[I]f a stone has fallen from a roof onto someone's head and killed him, they will show, in the following way, that the stone fell in order to kill the man. For if it did not fall to that end, God willing it, how could so many circumstances have concurred by chance (for often many circumstances do concur at once)? . . . And so they will not stop asking for the causes of causes until you take refuge in the will of God, that is, the sanctuary of ignorance. . . . Similarly, when they see the structure of the human body, they are struck by a foolish wonder, and because they do not know the causes of so great an art, they infer that it is constructed, not by mechanical, but by divine, or supernatural art, and constituted in such a way that one part does not injure another. Hence it happens that one who seeks the true causes of miracles, and is eager, like an educated man, to understand natural things, not to wonder at them, like a fool, is generally considered an impious heretic. (G II.80–81/C II.2–13)

As Spinoza's genealogy has already shown, God's will and his providential plan were originally invented to justify what human beings are not able to explain otherwise. Miracles are events that seem by definition to elude human understanding, but also natural phenomena such as the complexity of the human body seem beyond the grasp of human knowledge. God's providential design was invented in order to account for apparently teleological events that human beings are unable to account for on the basis of their (highly imperfect) knowledge of natural causes.

Aristotle would not be moved by this argument, since he grants that natural events are those that happen "invariably *or* for the most part." Exceptions to natural regularities do not undermine the fact that these events are still natural. What is called a "miracle" could easily fall into the category of exceptional (*natural*) events that confirm the rule. Moreover, in the case of events that do not happen regularly but by chance, Aristotle plainly admits an indeterminate chain of external *natural* causes concurring to produce them. Indefinitely many natural causes are necessary to explain why a stone falls down and strikes that person under that particular circumstance.⁵⁶ In this sense, there is no more need to invoke God's providential design to explain miracles or chance events than is needed to explain the regularity of natural phenomena.

Once again, Heereboord is a much more feasible target for Spinoza's criticism. Although Heereboord admits the possibility of chance events, he states that these events might be considered to happen by chance only concerning the secondary

⁵⁵Providing an account of Aristotle's view of the unmoved mover as an end in itself (e.g. *Metaphysics*, I.7, 988b 6–16; XII.10, 1075a 36–b) is far beyond the limits of this paper. However, scholars usually agree on the fact that Aristotle does not consider God as acting for the sake of natural things but rather as representing a model of goodness that constitutes a necessary condition for natural things to operate according to their own ends. See, on this point, Berti, "La causalità del Motore immobile secondo Aristotele"; Scharle, "Elemental Teleology," 157–61; Sgarbi, "Metaphysica A 7. 1072 b 10–13."

⁵⁶In Ep12 (G IV.61–62), Spinoza notes that "ancient Aristotelians" rightly accepted the possibility of an infinite regress of causes. On this point, see Laerke, "Spinoza and the Cosmological Argument According to Letter 12."

causes that contribute to produce them. No event might be said to happen by chance regarding God's concurrence with it because "God's will" is in fact the ultimate cause of every event whatsoever.⁵⁷ Moreover, Heereboord's main reason for invoking God's design is the impossibility of otherwise explaining the apparent regularity of "inanimate and brute" things that seem to act according to well-defined purposes. The anatomy of the human body clearly reveals a form of teleology, but the body (conceived of as a mere natural thing) cannot really *know* the end in virtue of which it has been designed in all its parts. Thus, Heereboord's argument goes, it is necessary to appeal to God's design in order to explain the teleological nature of the human body. However, this is exactly the illicit inference from ignorance to God's providential design that Spinoza aims to rule out.

The above reconstruction of Spinoza's anti-teleological arguments supports the conclusion that the closer an account of final causes is to that proposed by Heereboord, the more likely it will fall under Spinoza's attack. This entails that Spinoza's arguments work equally well against the account of final causes developed by Suárez and endorsed by Burgersdijk, who are the main sources of Heereboord's own account, as I have shown in section 3. Conversely, the closer an account of final causes is to Aristotle's, the less it will suffer from Spinoza's arguments. I shall illustrate this point by briefly considering the case of Aquinas. According to John Carriero, "Thomas's writings [are] representative of Aristotelian scholastic thinking about causation. . . . The main lines of his thought exercised considerable influence in the seventeenth century."⁵⁸ However, an examination of Aquinas's account of final causes on the background of the above discussion reveals that his position differs significantly from that defended within the later scholastic trend represented by Heereboord, and for this reason it is a less likely target of Spinoza's critique.

Aquinas articulates two different ways of "acting for an end":

[E]very agent, of necessity, acts for an end. . . . Nevertheless, it must be observed that a thing tends to an end, by its action or movement, in two ways: first, as a thing, moving itself to the end, as man; secondly, as a thing moved by another to the end, as an arrow tends to a determinate end through being moved by the archer who directs his action to the end. . . . But those things that lack reason tend to an end, by natural inclination, as being moved by another and not by themselves; since they do not know the nature of an end as such, and consequently cannot ordain anything to an end, but can be ordained to an end only by another. . . . It is proper to the irrational nature to tend to an end, as directed or led by another, whether it apprehend the end, as do irrational animals, or does not apprehend it, as is the case of those things which are altogether void of knowledge. (*Summa Theologiae* Ia-IIae, q. 1, a. 2c)⁵⁹

For present purposes, we must concentrate on three points of Aquinas's account of teleology. First, he does *not* conceive of natural teleology on the basis of the

⁵⁷See *Meletemata*, II, disp. 15, 240: [*C*]asus et fortuna, seu causa per accidens fortuita ac casualis, tantum sic dicuntur et dividuntur respectu causarum secundarum, non primae: nam Dei respectu, qui omnia, quae fiunt, quocunque modo fiant, bene vel male, necessario vel contingenter, ex intentione creaturae aut propensione aut praeteream, ab aeterno decrevit ac praedeterminavit.

⁵⁸Carriero, "Spinoza on Final Causality," 106–7.

⁵⁹*Summa Theologiae* Ia-IIae, q. 1, a. 2c (translated by Fathers of the English Dominican Province, URL = <<http://dhsprory.org/thomas/index.html>>). See the similar view in *Summa Contra Gentiles* II, ch. 30, par. 15.

model provided by human intentionality or as an "improper" form of final causality (see Suárez, *DM* 23.10.6). Rather, Aquinas allows a genuine distinction between the two equally acceptable ways in which teleology works in the case of rational or non-rational agents.⁶⁰

Second, Aquinas does *not* conceive of the "cognition of the end" as a necessary and general condition that any agent must always satisfy in order to act for an end. Since non-rational agents cannot be directed by their knowledge of the end and cannot choose it, God must direct them by embedding certain "natural inclinations" in their essence in order to allow them to act for an end even if they do not know it.⁶¹

Third, Aquinas does *not* conceive of the final cause as moving only "metaphorically" the thing on which it acts, as a principle of change always external to the thing's own nature. Rather, natural agents act for an end in virtue of their own "natural inclination" to achieve it, which Aquinas conceives of as constitutive of the thing's own nature. Although the *cause* of this natural inclination is external (i.e. God), the natural inclination itself, which is the final cause (i.e. the reason why the agent acts for a certain end), turns out to be embedded in the agent itself, independently of the agent's inability to acquire any knowledge of it.⁶²

Heereboord's view departs from Aquinas's concerning all these points.⁶³ As I discussed in section 3, Heereboord maintained that (1) natural teleology must be conceived of based on the model of human intentionality; (2) the "cognition of the end" is a *sine qua non* condition to act for an end; and (3) ends are always "external" to the agent and move it "metaphorically." By remaining closer to Aristotle's original account of natural teleology, Aquinas's position turns out to be less vulnerable to Spinoza's critique of final causes.

Among Spinoza's arguments, only the first—aimed against the anthropocentric idea that the whole of nature has been created for the sake of humans, and human beings to glorify God—maintains its efficacy against Aquinas's account. In fact, Aquinas submits natural teleology to God's providence, and accepts that God orders the ends of natural order according to a hierarchy of growing perfection.⁶⁴ However, Spinoza's second argument attacks two assumptions: (a) efficient and

⁶⁰In fact, the reason why Aquinas holds that "every agent, of necessity, acts for an end" is that in his view, no causal process (independent of the kind of agent that brings it about) can be fully determined without a final cause: *Summa Theologiae*, Ia-IIae, q. 1 a. 2c.

⁶¹See *De Principiis Naturae* 3.19: [*P*]ossibile est agens naturale sine deliberatione intendere finem: et hoc intendere nihil aliud erat quam habere naturalem inclinationem ad aliquid. Cf. Aristotle's *Physics* II.8, 199b27–31 discussed at the end of section 2. The same claim is stated in *Summa Contra Gentiles* III, ch. 2, par. 6.

⁶²The text quoted in footnote n. 37 suggests that there might be a sense in which final causes are "external." Nonetheless, Aquinas clarifies that the end is not completely extrinsic. As he writes in *Summa Theologiae* Ia-IIae q. 1 a. 3, *finis non est omnino aliquid extrinsecum ab actu*. According to Aquinas, "natural inclinations" really belong to the agent's nature (*De Veritate*, Q. 22, a. 1), and for this reason God does not direct natural agents in a "violent" but in a "natural" way (*Summa Theologiae* I q. 103, a. 1 ad 3). For further discussion, see Schmid, "Teleology and the Dispositional Theory of Causation in Thomas Aquinas."

⁶³In fact, Heereboord heavily relies on Suárez, and scholars agree on the fact that Suárez tends to diverge from Aquinas. Cf. e.g. the case of "substantial forms" discussed by Hattab, *Descartes on Forms and Mechanisms*, 31–64; and the case of "freedom of will" in Åkerlund, *Nisi temere agat*, 86–89.

⁶⁴See *Summa Contra Gentiles* III, ch. 22, par. 9.

final causes operate in different ways, and (b) final causes are always *external* to the agents, which they move only “metaphorically.” Neither of these assumptions seems to play a crucial role in Aquinas’s view. In fact, echoing Aristotle, Aquinas even accepts that formal, final, and efficient causes can coincide.⁶⁵

The third argument attacks the human habit to invoke God’s providential direction in order to account for natural phenomena that we could not explain otherwise. Spinoza’s complaints about what he calls a “reduction to ignorance” (G II.80/C 112) acquire a precise meaning against the background of Heereboord’s assumption that the “cognition of the end” is a necessary condition for final causality, and thus that God’s providential design must be invoked exactly to supply this “cognition” and explain what human beings cannot account for otherwise. However, Aquinas’s position does not consider the cognition of the end as a necessary condition that every agent must satisfy in order to act for an end. Moreover, God’s role is more that of providing the ontological source for the “natural inclinations” of finite creatures, which cannot choose their ends on their own. In this sense, Aquinas’s position does not seem to commit any “reduction to ignorance” of the kind denounced by Spinoza.

Despite Carriero’s statement quoted earlier, only a minority of later scholastic authors upheld Aquinas’s account of final causes. For instance, Francesco Silvestri of Ferrara (1474–1528) defended Aquinas’s views in his commentary to the *Summa Contra Gentiles*.⁶⁶ Francisco de Toledo (1532–1596), who was one of the most widely read and influential Jesuit philosophers during the sixteenth century, praised Aquinas as the best commentator ever on Aristotle, and explicitly defends Aquinas’s account of final causes in his own commentary to the second book of Aristotle’s *Physics*.⁶⁷ Nonetheless, the account of final causes proposed by Suárez and adopted by Burgersdijk and Heereboord was much more widely accepted.⁶⁸ This explains why Spinoza’s arguments are tailored against Heereboord’s position and why, given this specific target, they turn out to be less successful against Aquinas’s account. From a historical point of view, it was crucial for Spinoza to take issue with the most current account of final causes, which was directly known to Spinoza via Heereboord, and which was significantly distant not only from Aristotle’s original account, but also from that of earlier Aristotelians such as Aquinas himself and his later scholastic followers such as Silvestri and Toledo.

To conclude, the above discussion establishes three main points. First, although it is beyond the limits of this paper to discuss Garrett’s positive claim concerning the proximity of Spinoza’s and Aristotle’s views on teleology, the above reconstruction provides a preliminary but necessary basis to explore further this line of research. By showing that Spinoza’s arguments in the Appendix successfully rule out only a specific account of final causes, which proves to be different than Aristotle’s, the

⁶⁵*De Principiis Naturae* 4.34: [T]res causae possunt incidere in unum, scilicet forma, finis, et efficiens. Cf. Aristotle’s *Physics* II.7, 198a 20–30 discussed in section 2.

⁶⁶See Silvestri, *Commentaria*, II, ch. 30, 138, and III, ch. 2–3, 5–15.

⁶⁷See Toledo, *Commentaria*, 74–75: [U]nde est notandum discrimen inter modum, quo animalia agunt propter finem, et insensibilia, et homo ipse, quod notavit S. Thom. P. 2 q. 1. Insensibilia enim dicuntur agere propter finem, quia ex se, et ex natura ipsorum ad tales fines inclinantur; nulla finium in ipsis cognitione existente.

⁶⁸See Des Chene, *Physiologia*, 168–200.

paper shows that Aristotle's account of unthoughtful teleology is not undermined by Spinoza's anti-teleological commitments. Far from taking issue with *any* "scholastic-Aristotelian" conception of final causes, these commitments turn out to be narrower in their aim and more precise in their target. This result fills a gap in the existing literature on Spinoza's critique of final causes by showing why, and in what sense, his arguments do not rule out an account of unthoughtful teleology such as we find in Aristotle's *Physics*.⁶⁹

Second, the comparison between Aristotle's and Heereboord's views reveals that the latter (despite his opposite programmatic claims) is significantly different from Aristotle's original position and remains much more indebted to the scholastic tradition (in particular to Suárez). Specifically, the paper shows that the main difference between Aristotle's and Heereboord's accounts is that, for the latter, final causes operate as external principles, and their way of acting must be understood based on the model provided by human intentionality. Heereboord's account of final causes does not represent an isolated or idiosyncratic case, but rather it summarizes the majority late scholastic view on final causes represented by Suárez and endorsed by Burgersdijk in the Dutch university milieu familiar to Spinoza. Heereboord represents the most proximate source (from a chronological, geographical, and textual point of view) for Spinoza's acquaintance with this specific trend in the later scholasticism, which supports an account of final causes distinct from those of other major scholastic authorities such as Aquinas, and later Thomists such as Silvestri and Toledo. Spinoza's arguments are tailored to succeed against the specific later scholastic account voiced by Heereboord, rather than against any other account of final causes, as the comparison with Aristotle and Aquinas's views proved.

Third, by considering Heereboord as an exemplary target of Spinoza's Appendix, we can better appreciate how Spinoza's strategy consists in taking issue with the way in which pivotal scholastic authorities maintained their influence even upon those representatives of the Dutch culture who aimed at dismissing the scholastics. Spinoza's arguments against final causes are no less challenging for the later scholastic legacy than Aristotle's original view on unthoughtful teleology. However, since Aristotle was appropriated as a noble father not only by the scholastic tradition but also by its Dutch critics, such as Burgersdijk and Heereboord, Spinoza arguably felt the urgency of refraining from appealing to his authority, and delivers his attack against the widespread notion of final causes shaped by the model of human intentionality. In so doing, Spinoza ironically pushed to its extreme consequences Heereboord's own call: "Let us shake the dust from our eyes, and let us not adhere to one <person>, Aristotle: let us enter not just Aristotle's school, but the school of Nature" (*Meletemata*, 6).⁷⁰

⁶⁹For an outline of Spinoza's own positive views about teleology in nature, see Sangiacomo, "Teleology and Agreement in Nature."

⁷⁰*Excutiamus tandem pulverem ex oculis nostris, nec in uno haereamus Aristotelis, non Aristotelis tantum sed Naturae scholam ingrediamur.*

Abbreviations for Spinoza's Works

C = *A Spinoza Reader*
CM = *Metaphysical Thoughts*
E = *Ethics*
Def = *Definition*
Dem = *Demonstration*
Expl = *Explanation*
G = *Opera*
P = *Proposition*
Pref = *Preface*
S = *Scholium*

Other Abbreviations for Suárez's Works

DM = *Distutationes Metaphysicae*
O = *Opera Omnia*

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