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Aristotle's Natural Philosophy: Aretological Reading and Environmental Implications¹

Abstract: This paper examines the relation between ἀρετή (excellence) and ἔργον (function) in Aristotle, proposing an *aretological* reading of his natural philosophy with environmental implications. It argues that excellence consists in the proper realisation of a teleologically determined function, extending beyond human ethics to the broader natural world. By comparing neo-Aristotelian naturalism and ecofeminist virtue ethics, the paper explores attempts to universalise “virtue” across human and non-human domains. It defends a terminological distinction between moral virtue and biological excellence, while suggesting that Aristotle's teleology allows for a non-anthropocentric environmental perspective grounded in functional fulfilment.

Keywords: Aristotle, natural philosophy, teleology, function, virtues

1. Introduction

Contemporary environmental virtue ethics draws heavily on Aristotle in its use of the concepts of virtue, function, and flourishing. Virtue is typically

¹ ChatGPT-5.5 was used for stylistic improvements and language polishing. All content, arguments, and conclusions are solely the author's.

understood, within a weakly anthropocentric framework, as a species-specific capacity of human beings within the natural biological order of life forms.² Virtue is therefore accompanied by rational choice and intentional behaviour, which precludes attributing virtues to non-human life forms. Following Aristotle's use of the term ἀρετή, this constitutes one way of grounding contemporary virtue ethics in natural philosophy. However, alternative approaches remain available.

Most recently, Delorme, Calidori, and Frigo propose a different version of environmental virtue ethics in an attempt to de-anthropocentrise the notion of virtue. In their view, this entails abandoning the traditional human-centred perspective. Their aim is to articulate the possibility of non-human, as well as amoral, virtues, grounding all virtues in function.³ Moreover, they seek to de-anthropocentrise not only the notion of virtue but also that of agency, arguing that even non-human beings can possess agency and exhibit virtues in a non-human and amoral sense.⁴ Their approach appears to open up the possibility of speaking of functional ecological virtues across the entire biological realm.

Delorme, Calidori, and Frigo advocate grounding their broadened concept of virtue in Aristotle. They argue that Aristotle's notion of virtue is not limited to human beings, but that non-human beings (e.g., a horse) and artefacts (e.g., a knife) can also exhibit virtues.⁵ However, they provide no textual evidence to support this reading of Aristotle. This paper explores the plausibility of such an interpretation of virtue within Aristotle's natural philosophy, supplemented by two contemporary approaches to virtue ethics: neo-Aristotelian naturalism (Philippa Foot and Rosalind Hursthouse) and virtuous ecofeminism (Delorme, Calidori, and Frigo). My aim is to examine an *aretological* reading of Aristotle's natural philosophy, along with its potential environmental implications and its terminological justification for either narrowing or broadening the connotation of the term virtue.

First, I examine Aristotle's general account of the relation between ἀρετή and ἔργον (usually translated as "function"), which provides the conceptual foundation for the subsequent analysis. Second, I turn to his natural phi-

² P. Foot: *Natural Goodness*. Clarendon Press, Oxford 2001, pp. 25–37; R. Hursthouse: *On Virtue Ethics*. Oxford University Press, Oxford 1999, pp. 198–207.

³ D. Delorme, N. Calidori, G. Frigo: "Ecological Virtuous Selves: Towards a Non-Anthropocentric Environmental Virtue Ethics?" *Philosophies*, 9, no. 11 (2024), pp. 1–15. <https://doi.org/10.3390/philosophies9010011>.

⁴ *ibidem*, pp. 2–3. They derive their concept of agency from Plumwood's ecofeminist account of agency. V. Plumwood: *Feminism and the Mastery of Nature*. Routledge, London 1993, p. 159.

⁵ D. Delorme, N. Calidori, G. Frigo: "Ecological Virtuous Selves..." p. 2.

losophy and teleology, exploring the possibilities of an *aretological* reading. Third, I address the resulting question of environmental implications and appropriate terminology in contemporary debates. A central aim is to show that Aristotle's natural philosophy can be interpreted as opening space for an environmental perspective, rather than being confined to an anthropocentric one.

2. The Notion of ἀρετή and ἔργον

The most obvious example of the correlation between these two terms appears in Aristotle's well-known *ergon* argument in the *Nicomachean Ethics*. There, the notion of function (ἔργον) is situated primarily within the context of human affairs: he discusses the functions of various professions and arts, as well as of different parts of the human body. Through a series of analogies, he develops this line of reasoning to argue that human beings as such also have a function.⁶ Next, he excludes the vegetative and sensory parts of the soul to emphasise that the human function differs from that of plants and animals. Accordingly, the question of human function is a matter of the human soul.⁷ By analogy, the specific function of different living beings is determined by their soul. Accordingly, function differs essentially between living beings and non-living things.

From a metaphysical perspective, even the natural and biological features of function are teleological and essential.⁸ Aristotle says: "For the function (ἔργον) is the end (τέλος), and the activity (ἐνέργεια) is the function.

⁶ EN 1097b24–1098a34. Barney argues that this line of reasoning may initially appear as an instance of Aristotle's induction (ἐπαγωγή), in which case it would represent a poor application of the method. However, I agree with Barney that it is better understood as an example of analogy, a mode of reasoning Aristotle frequently employs. R. Barney: "Aristotle's Argument for a Human Function." *Oxford Studies in Ancient Philosophy*, 34 (2008), pp. 239–322. <https://doi.org/10.1093/oso/9780199544875.003.0009>

⁷ C. Rapp: "Aristotle and Neo-Aristotelian Naturalism." In: *Aristotelian Naturalism*. Ed. M. Hähnel. Springer, Cham 2020, pp. 44–47.

⁸ T. Irwin: "The Metaphysical and Psychological Basis of Aristotle's Ethics." In: *Essays on Aristotle's Ethics*. Ed. A. O. Rorty. University of California Press, Berkeley 1980, pp. 35–53.

Therefore, even the word ‘activity’ is derived from ‘function’, and points to the fulfilment (πρὸς τὴν ἐντελέχειαν).⁹

Aristotle’s teleological essentialism determines the natural purpose of function, which is fulfilled through activity (ἐνέργεια).¹⁰ Yet not just any activity: Aristotle invokes πρὸς τὴν ἐντελέχειαν to emphasise that it must be activity directed toward the fulfilment of the τέλος, that is, the natural end or essential purpose. The close connection between his teleology and natural philosophy is further confirmed in the *Physics*: “But the nature (φύσις) is the end (τέλος) or that for the sake of which.”¹¹

We may conclude that Aristotle links the notions of end (τέλος), function (ἔργον), and nature (φύσις). Function appears to consist in the activity (ἐνέργεια) of pursuing one’s natural end; both function and activity are thus natural for particular kinds of things – for example, seeing in the case of the eye. The natural world, accordingly, is teleological, and the concept of function (ἔργον) can be extended to various kinds of entities within Aristotle’s framework. This line of thought has its roots in Plato: for both philosophers, inquiry into nature (φύσις) ultimately concerns essence (οὐσία).¹²

We may now turn to the relation between ἔργον and ἀρετή, which Aristotle addresses explicitly in the *Nicomachean Ethics*:

We may remark, then, that every excellence (ἀρετή) causes that of which it is an excellence to be in a good state, and to perform its characteristic function (τὸ ἔργον αὐτοῦ) well. The excellence of the eye, for example, makes it and its characteristic function good, for it is by the excellence of the eye that we see well. Similarly the excellence of the horse makes a horse good – at running, at carrying its rider, and at facing the enemy.¹³

⁹ *Met.* 1050a21–23. All translations in this paper are my own.

¹⁰ While many authors maintain that, for Aristotle, function is realised through activity, others object that it may instead be understood as a product. Baker argues that Aristotle’s use of function is not uniform: in most cases it is identified with activity, but in others with product. S. Baker: “The Concept of Ergon: Towards an Achievement Interpretation of Aristotle’s ‘Function Argument’.” *Oxford Studies in Ancient Philosophy*, 48 (2015), pp. 231–236. <https://doi.org/10.1093/acprof:oso/9780198735540.003.0006>.

¹¹ *Phys.* 194a28–29.

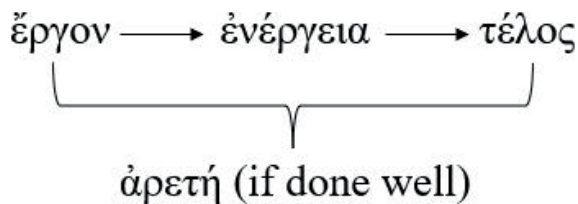
¹² C. Rapp: “Aristotle and Neo-Aristotelian Naturalism...,” pp. 41–42.

¹³ *EN* 1106a15–21. Throughout this paper, I translate ἀρετή primarily as “excellence” – its most common meaning (often alongside “goodness”), whereas the translation “virtue” is both of later time and typically associated with a narrower moral context. H. G. Liddell, R. Scott: *A Greek-English Lexicon*. <https://www.perseus.tufts.edu/hopper/text?doc=Perseus:text:1999.04.0057>.

First, note that the excellence (ἀρετή) of the horse is presented largely in anthropocentric and instrumental terms. Carrying its rider and facing the enemy are activities significant not for the horse itself, but for the human who rides it into battle. Similarly, within this context, running may be described as the horse's excellence from the rider's perspective. Although running is also beneficial for a horse living freely in nature – for instance, in escaping predators – it is of particular importance in contexts such as cavalry or chariotry. This passage thus frames the horse's excellence primarily in human-centred terms, emphasising its instrumental value. This does not exclude the existence of a function and excellence proper to the horse itself; rather, the context foregrounds the human perspective and the question of human function and excellence. I return to this issue in the next section.

Given the foregoing, excellence (ἀρετή) may be understood as consisting in the proper and good activity (ἐνέργεια) of a natural function (ἔργον). On this view, every kind of excellence can plausibly be interpreted as functional, which accords with Aristotle's earlier claim in the *Eudemian Ethics*, where he characterises ἀρετή as possessing the nature of ἔργον.¹⁴ This feature partly supports the claim of Delorme, Calidori, and Frigo, who define virtues as “excellent behaviors and actions at a functional level.”¹⁵ However, this remains insufficient to justify a unified translation of ἀρετή as “virtue.”

To summarise, for Aristotle, function (ἔργον) consists in the fulfilment of an end (τέλος) through activity (ἐνέργεια); when performed well, this constitutes excellence (ἀρετή). See the diagram below:



For living beings, both function and end are determined by the kind of soul they possess. Aristotle emphasises that all living beings share a common function (ἔργον) – nutrition and reproduction – through which they realise their natural end.¹⁶ In plants, this is their sole function, as they possess only the vegetative part of the soul.¹⁷ The specific ways of nourishing and reproducing are determined by each plant's end (τέλος). As the soul

¹⁴ *EE* 1218b30nn.

¹⁵ D. Delorme, N. Calidori, G. Frigo: “Ecological Virtuous Selves...,” p. 8.

¹⁶ *De An.* 415a25–b1.

¹⁷ *De An.* 413a21–34.

becomes more complex, so too do its capacities and activities. In the *Historia Animalium*, Aristotle outlines his method by noting the need to examine the common way of life – that is, common functioning (κοινὸν γίνεται πάντων τὸ ἔργον) – of different social animals, while recognising their differences.¹⁸ For human beings, who possess all three kinds of soul and are also social, the function directed toward the fulfilment of their natural end is correspondingly more complex.

When Aristotle discusses (human) psychological phenomena, he emphasises that they may be described in either biological or formal terms. These approaches do not exclude one another but rather complement each other as different perspectives on the same phenomenon. Accordingly, every activity of the soul is both biological and formal, directed toward corresponding ends. The various functions of the soul are therefore both biological and formal in character. Likewise, when considering the function of a bodily part (e.g. the eye), its biological activity is inseparable from the activity of the soul. The relation also works in reverse: anger, for instance, may be described formally as an activity of the soul, yet also biologically as a bodily process (such as the heating of blood around the heart).¹⁹ Thus, for Aristotle, psychological function – typically described in formal terms – is equally a biological function.

However, although all functions are determined by an essential natural end, a distinction remains between the natural and the artificial (or artistic). In *De Partibus Animalium*, Aristotle refers to the functions of nature (φύσεως ἔργοις) and maintains that they are more closely tied to necessity than the functions of art.²⁰ He makes similar claims in the *Physics*.²¹ Although even a statue may be said to have an end, the role of necessity allows us to distinguish between stronger and weaker senses of nature (φύσις) in the cases of nature proper and artefacts.

Summarising Aristotle's position, we can distinguish two general kinds of function: natural (in a strong sense) and artificial. Within natural function, we may further distinguish between the functions of bodily parts and those of whole species, both of which correspond to the functions of the soul as outlined above. Even human reason – despite its seemingly divine or exceptional status – forms part of human nature and biological need; however, the harmony between reason and biological inclination is not given but must

¹⁸ *Hist. An.* 488a7–10.

¹⁹ *De An.* 403a16–b2.

²⁰ *De Part.* 639a19–23.

²¹ *Phys.* 199a5–b10.

be cultivated.²² More broadly, the nature of living beings depends on the integration of natural philosophy and biology with metaphysical concepts, an approach Alasdair MacIntyre describes as Aristotle's "metaphysical biology."²³ This framework yields a form of biological and teleological essentialism across the natural world.

Nevertheless, just as we can distinguish kinds of function, we can also distinguish corresponding kinds of excellence: broadly, natural and artificial, and within the natural kind, excellences of bodily parts, psychic capacities, and species as such. Aristotle also identifies specifically anthropocentric excellences – moral and intellectual. Moral excellences (e.g. courage, temperance, truthfulness) concern human action (πρᾶξις) and character (ἠθικός), and are thus species-specific.²⁴ In modern usage, these are typically called virtues to distinguish them from other forms of excellence. Intellectual excellences, by contrast, consist in the proper activity of reason across different domains of life.²⁵ In line with the foregoing, all kinds of excellence correspond to particular kinds of activity (ἐνέργεια), each with its own distinctions.

An important point is that Aristotle lacked the linguistic resources to distinguish terminologically between excellence and virtue, even though he clearly differentiates virtues from other kinds of excellence. In other words, while he recognises the varying meanings and connotations of the broad term ἀρετή, the limits of the Greek language of his time prevent a more precise distinction.

With this general account of the relation between ἀρετή and ἔργον in place, I now turn to Aristotle's natural philosophy and its possible *aretological* interpretation.

3. Natural Teleology and Functionality

For Aristotle, material explanation alone is insufficient to account for variability and processes in nature. Although both matter (ὕλη) and form

²² G. Keil: "Metaphysical, Scientific, Semantic and Aristotelian Naturalism." In: *Aristotelian Naturalism*. Ed. M. Hähnel. Springer, Cham 2020, p. 74.

²³ A. MacIntyre: *After Virtue*. University of Notre Dame Press, Notre Dame 2007, pp. 58, 148, 162–163, 196.

²⁴ *EN* 1103a14–18.

²⁵ *EN* 1103a3–10.

(μορφή) constitute nature, form is explicitly regarded as nature in the stronger sense.²⁶ Given the teleological structure of nature, primacy cannot be assigned to matter: nature is identified with end or purpose, while matter is relative to form, which determines both purpose and thus the nature of things.²⁷ Nature is also described as οὐσία, and since οὐσία is determined by form, nature is predominantly form-determined.²⁸ From a contemporary environmental perspective, this would suggest that preservation primarily concerns the realisation of form, with the preservation of matter as secondary. Yet insofar as matter is bound to natural teleology, preserving form also entails preserving matter.

This is reflected in Aristotle's account of living beings, where the compound of matter and form is hierarchically organised across organs, body parts, and the organism as a whole.²⁹ The nature of each organ or part is determined by the nature of the whole.³⁰ As noted above, nature is identified with end, realised through the proper activity of a natural function. Function thus constitutes the teleologically ordered means by which a natural end is achieved. Accordingly, there is a hierarchy of functions and corresponding activities in living beings, extending from the organism to its parts and organs.

The fulfilment of an end consists in the full realisation of οὐσία. The proper functional activity leading to this end is termed ἀρετή, as discussed above. Although Aristotle does not explicitly employ ἀρετή in his biological works, an *aretological* reading of his natural philosophy remains plausible. If nature aims to bring each living being to its full potential in accordance with its essential form, this process may be understood as a form of excellence; failure to do so constitutes imperfection, which Aristotle at times characterises as defect or even monstrosity.³¹

Matter and form also function as causes (αἰτίαι) in Aristotle's natural philosophy, constituting the first two of his four causes.³² Nature is further identified as the cause of motion and rest, that is, the third cause.³³ Aristotle explicitly states that nature is the principle or cause of motion and rest "in

²⁶ *Phys.* 193b6–8.

²⁷ *Phys.* 194b9.

²⁸ *Phys.* 192b33–34; *Met.* 1032b1–2, 1033b5–6, 1037a5–10, 1043a14–28.

²⁹ *GA* 715a9–11. Aristotle also maintains that no part of a living being is purely material or entirely without matter. *Part. An.* 643a24–26.

³⁰ *Part. An.* 654a34–b6.

³¹ *Phys.* 199b1–4; *GA* 767b2–768a14.

³² *Phys.* 194b24–35.

³³ *Phys.* 194b29–32.

that to which it belongs primarily.”³⁴ Crucially, every natural thing – especially living beings – possesses this principle within itself.³⁵ As such, it forms part of their οὐσία and is therefore closely bound to teleology.

This brings us to the fourth and final cause, the end (τέλος). In addition to its relation to function and excellence, the end of a living being consists in its full development.³⁶ This may be termed the final end, as intermediate ends also exist, contributing to its attainment or preservation. For example, a spider builds its web to catch food – an end in a limited sense, yet ultimately a means to the final end of achieving or sustaining its fully developed form.³⁷

Aristotle also invokes natural necessity in the generation of the parts of living beings, thereby suggesting a hierarchy of natural ends.³⁸ This establishes a deeper causal interconnectedness within nature: what may appear accidental or spontaneous is in fact the outcome of an external cause that remains integral to nature.³⁹ Considering the interrelation of causes, the end also functions as an internal cause of motion and rest. For instance, the fully developed form of an animal requires nutrition, which prompts it to seek food and thus to move – just as a spider builds its web. Aristotle's causes are therefore not discrete but interwoven within the account of οὐσία or nature. End, motion, and rest are correlated within natural teleology, and no natural process is without significance – only actions that succeed (ἀρετή) or fail in fulfilling their end.

This brings us to an *aretological* reading of Aristotle's natural philosophy. As argued above, an end is achieved through the activity of a function that naturally and essentially leads to it; when successful, this constitutes excellence (ἀρετή). The correlation of end, motion, and rest suggests that functional activity itself consists in motion or rest, which may in turn generate further motion or rest, whether as internal or external causes. On this view, every activity or event in nature can be interpreted as functional, with its orientation understood in terms of excellence. Whether directed toward a final or intermediate end, nature as a whole may thus be seen as aiming at excellence, supporting an interpretation of Aristotle's natural teleology as implicitly *aretological*.

³⁴ *Phys.* 192b21–23.

³⁵ *Phys.* 192b13–14.

³⁶ *Phys.* 194a27–29.; For a detailed account of Aristotle's final cause, see T. Gotthelf: *Teleology, First Principles, and Scientific Method in Aristotle's Biology*. Oxford University Press, Oxford 2012, pp. 4–86.

³⁷ *Phys.* 194b32–33, 199a20–30.

³⁸ *Part. An.* 640a33–b4.

³⁹ *Phys.* 197b18–20.

I return to the example of the horse and its rider. Although the rider directs the horse into battle, the principle and cause of running remain immanent to the horse itself. Thus, while the context is anthropocentric insofar as it concerns human warfare, the capacity for running belongs to the horse as its natural function in activity. When performed well, in accordance with natural teleology, this constitutes excellence (ἀρετή). The anthropocentric framing is further qualified by Aristotle's recognition of both wild and domesticated horses as natural states.⁴⁰ The horse's excellence is therefore not inherently anthropocentric: it may be so in the context of carrying a rider into battle, yet horses also engage in their own forms of conflict. Aristotle, for example, notes that the horse and the anthus are natural enemies: the anthus attacks to frighten the horse, while the horse attempts to drive it away or kill it. Such interactions exemplify animal conflict over shared grazing grounds.⁴¹

The excellence of the horse may thus be manifested in both anthropocentric and non-anthropocentric contexts, each forming part of its natural function. Consequently, the aretological character of proper function can be extended to broader aspects of nature. There are good reasons to adopt an aretological reading of Aristotle's natural philosophy, as it follows plausibly from his theoretical framework. Although not explicitly articulated by Aristotle, such a reading emerges as a coherent reconstruction of the relation between teleology, function, and excellence in his thought.

I now turn to the possible environmental implications and the question of appropriate terminology in contemporary debates.

4. Comparing Views and Terminology

In contemporary neo-Aristotelian naturalistic virtue ethics, different life forms are understood in terms of their respective functions. Philippa Foot and Rosalind Hursthouse both appeal to the "natural, biological order" of life forms as the conceptual basis for evaluation.⁴² Although particular evaluations may differ, the general structure remains constant: evaluation

⁴⁰ *Hist. An.* 488a26–30.

⁴¹ *Hist. An.* 609b13–21.

⁴² P. Foot: *Natural Goodness...*, p. 29; R. Hursthouse: *On Virtue Ethics...*, p. 206.

is determined by natural function.⁴³ Foot distinguishes broadly between plants, animals, and human beings.⁴⁴ Her framework is further developed by Hursthouse, who adds the category of social animals, to which humans belong.⁴⁵ While their approach is only weakly naturalistic, its central aim is metaethical – namely, to clarify what it means to be a good member of a species.⁴⁶ The answer lies in functioning well in accordance with that species' natural function.

These authors do not explicitly adopt Aristotle's metaphysical biology, with its teleological essentialism and psychological implications. Nevertheless, their concept of life forms remains teleological, insofar as it presupposes a determinate life purpose and functional aim, thereby leaving their theory open to a form of essentialism. A potential weakness in both Philippa Foot and Rosalind Hursthouse is their rejection of contemporary biology, particularly evolutionary theory. As several authors have argued, their position would not be undermined by engaging with contemporary biological accounts; on the contrary, doing so could strengthen the naturalistic foundations of virtue ethics and its associated concept of life forms.⁴⁷

What is crucial for this ethical theory is the claim that there is a substantive distinction between biological and ethical function. Whereas other life forms are evaluated in terms of their biological functions, the primary function of human beings lies in the exercise of their species-specific capacity for reason.⁴⁸ Given that humans are social animals engaged in practical life shaped by interaction and cooperation, their primary function is ethical, in accordance with reason.

This distinction implies that biological features – such as fertility or infertility, sexual orientation, or bodily disability – are not subject to ethical

⁴³ P. Foot: *Natural Goodness...*, p. 40.

⁴⁴ Ibidem, pp. 25–37.

⁴⁵ R. Hursthouse: *On Virtue Ethics...*, pp. 198–207.

⁴⁶ J. Annas: "Virtue Ethics: What Kind of Naturalism." In: *Virtue Ethics, Old and New*. Ed. S. Gardiner. Cornell University Press, Ithaca and London 2005, pp. 11–29.; G. Keil: "Metaphysical, Scientific, Semantic and Aristotelian Naturalism..." p. 74; J. Hacker-Wright: *Philippa Foot's Metaethics*. Cambridge University Press, Cambridge 2021.

⁴⁷ P. Bloomfield: "Naturalistic Moral Realism and Evolutionary Biology." *Philosophies*, 7/2 (2022), pp. 1–11. <https://doi.org/10.3390/philosophies7010002>; J. Mizzone: *Evolution and the Foundations of Ethics: Evolutionary Perspectives on Contemporary Normative and Metaethical Theories*. Lexington Books, Lanham 2017, pp. 121–133; P. Moosavi: "Is Neo-Aristotelian Concept of Organism Presupposed in Biology?" In: *Aristotelian Naturalism*. Ed. M. Hähnel. Springer, Cham 2020, pp. 336–341; M. Wild: "What Is Biological About Aristotelian Naturalism?" In: *Aristotelian Naturalism*. Ed. M. Hähnel. Springer, Cham 2020, pp. 134–141.

⁴⁸ P. Foot: *Natural Goodness...*, pp. 38–43, 51–70; R. Hursthouse: *On Virtue Ethics...*, pp. 121–140.

evaluation, as they belong to biological function.⁴⁹ One may describe a human being as functioning poorly at the biological level, for instance in cases of infertility, but such an assessment carries no ethical significance. By contrast, a person may be judged a bad human being on the basis of deficient moral conduct, but not on account of infertility or physical disability. Both kinds of function, however, admit of success (achieving the natural end) or failure (falling short of it), though only the latter bears ethical relevance.

While Foot and Hursthouse restrict virtue to the proper fulfilment of human ethical function – thereby rendering virtues exclusively anthropocentric – biological functions may likewise be properly realised and can be described as biological excellences. Both virtues and biological excellences thus share a functional character. This contrasts with Delorme, Calidori, and Frigo, who employ a unified terminology of virtue.

The central distinction proposed by Delorme, Calidori, and Frigo is that between moral and amoral virtues. While amoral virtues may be exercised by both human and non-human beings, only humans are capable of moral virtue.⁵⁰ They further argue that there are numerous instances of non-human beings exhibiting ecological virtues, leading them to distinguish between functional and moral ecological virtues – an approach with notable normative environmental implications.⁵¹ This distinction corresponds to their broader tripartite account of virtue as moral, amoral, and functional.⁵² For Aristotle, by contrast, every form of ἀρετή is functional.

As shown earlier, the example of the horse – though often read as illustrating the anthropocentric character of ἀρετή – does not exclude a non-anthropocentric interpretation. Delorme, Calidori, and Frigo treat it as a case of *non-human agency affecting humans*: a non-human being exercises its own virtue in a way that impacts human agents, while still allowing for the possibility that such activity may have an instrumental dimension.⁵³

However, their account remains somewhat imprecise in presupposing the horse's agency. On a weak notion of agency, the horse runs insofar as it is motivated to do so, which may be aligned, to some extent, with Aristotle's concept of an internal cause of motion and rest. On a stronger, moral conception of agency, however, the initiating impulse and rational intention

⁴⁹ P. Foot: *Natural Goodness...*, pp. 42–51.

⁵⁰ D. Delorme, N. Calidori, G. Frigo: "Ecological Virtuous Selves..." p. 3.

⁵¹ D. Delorme, N. Calidori, G. Frigo: "Ecological Virtuous Selves..." pp. 10–11.

⁵² D. Delorme, N. Calidori, G. Frigo: "Ecological Virtuous Selves..." p. 2.

⁵³ D. Delorme, N. Calidori, G. Frigo: "Ecological Virtuous Selves..." p. 4.; They distinguish (a) human agency affecting humans, (b) non-human agency affecting humans, (c) human agency affecting non-humans, and (d) non-human agency affecting non-humans. D. Delorme, N. Calidori, G. Frigo: "Ecological Virtuous Selves..." pp. 4–5.

belong to the human rider, who directs the horse's action. In this context, Aristotle distinguishes two principal kinds of human excellence: moral virtue (ἠθικὴ ἀρετή) and intellectual virtue (διανοητικὴ ἀρετή).⁵⁴ Moral virtue concerns character and human action grounded in rational choice (προαίρεσις), whereas intellectual virtue pertains to forms of knowledge and their proper exercise.⁵⁵ The crucial point is that moral virtue and choice presuppose free agency, while animal behaviour is governed by natural teleology. Accordingly, only the human rider qualifies as an agent in the strong sense.

The case of the horse illustrates the complexity of natural teleology, within which ethics also plays a role, and where two levels of agency intersect. In Aristotle's terms, this reflects an interplay of internal and external causality. The horse's ἀρετή may thus be viewed from two perspectives: moral (the human rider directing it into battle) and amoral (the horse's own function of running), both of which belong within an *aretological* account of natural teleology.

Aristotle, Foot, and Hursthouse clearly distinguish moral and intellectual excellences (virtues) from other kinds of excellence. Aristotle, however, does not develop a precise terminological distinction, relying instead on the single term ἀρετή, whereas Foot and Hursthouse introduce such a distinction, thereby rendering the concept of virtue more precise. Delorme, Calidori, and Frigo, by contrast, treat all excellences as virtues, distinguishing their types according to different forms of agency to which they correspond. These ecofeminist authors justify their use of a unified concept of virtue by appealing to its historical meaning as "excellence and mastery of skills," which may initially seem consistent with Aristotle's use of ἀρετή.⁵⁶ However, this historical appeal appears oversimplified and thus potentially misleading.

The relevant historical grounding concerns the notion of ἀρετή, not that of virtue, which is a derivative term shaped by its imprecise translation into Latin (*virtus*) and its subsequently narrowed meaning. The appeal to historical grounds by Delorme, Calidori, and Frigo overlooks both the linguistic limits of ancient Greek and the interpretative challenges involved in determining the meaning of terms such as ἀρετή in context. While their arguments remain coherent within their own framework, their terminological usage risks being misleading, as it neglects these linguistic considerations. This issue is addressed by the contemporary distinction between excellence and virtue employed by neo-Aristotelians such as Philippa Foot and Rosalind Hursthouse. On this approach, a clear terminological distinction between

⁵⁴ EN 1103a14–18.

⁵⁵ EN 1111b4–6, 1112a1–3, 1139b14–1141b8.

⁵⁶ D. Delorme, N. Calidori, G. Frigo: "Ecological Virtuous Selves..." p. 11.

biological excellence and moral virtue proves more plausible, as it preserves the difference between biological and ethical function.

What Delorme, Calidori, and Frigo effectively do is extend the connotation of the term “virtue” while simplifying the complexity of Aristotle’s example of the horse. They explicitly aim to deconstruct contemporary concepts such as virtue, even appealing to a “spontaneous understanding.”⁵⁷ However, such deconstruction – at least in this case – introduces semantic indeterminacy into what would otherwise be a precise terminology. Moreover, these ecofeminist authors do not engage with teleological or essentialist questions, largely bypassing them. Their discussion of function is limited to so-called functional virtues, understood as excellences at the level of function. It remains unclear whether they accept or reject the teleological structure of function, as this issue is left unaddressed. As a result, their position appears comparatively less conceptually developed and precise.

However, Delorme, Calidori, and Frigo are not entirely mistaken in identifying historical grounds for environmental considerations within Aristotle’s natural philosophy and ethics. On an *aretological* reading of his teleology, every living being functions toward the realisation of its partial and final ends. Non-human beings deviate from nature only insofar as they fail to function properly – that is, to achieve excellence. Otherwise, their motion, rest, and behaviour remain in accordance with nature.

Only human beings can act against nature, owing to the freedom of rational choice. To cultivate a pro-natural orientation in human action thus requires first understanding nature – that is, grasping the character of natural teleology through intellectual virtues. Similar claims have been advanced by contemporary environmental virtue ethicists: to follow and respect nature presupposes understanding it.⁵⁸ This appears plausible insofar as human beings are themselves part of nature and its *aretological* teleology. To act *contra naturam* would therefore be to irrationally oppose both one’s own nature and the realisation of species-specific excellence, once such understanding is attained. In this respect, neo-Aristotelian naturalists remain closer to Aristotle, though ecofeminist authors are not entirely mistaken in treating his thought as a historical source for their position.

⁵⁷ D. Delorme, N. Calidori, G. Frigo: “Ecological Virtuous Selves...,” p. 10.

⁵⁸ T. Hill: “Ideals of Human Excellence and Preserving Natural Environments.” In: *Autonomy and Self-Respect*. Ed. T. Hill. Cambridge University Press, Cambridge (1991), p. 111.; T. Hursthouse: “Environmental Virtue Ethics.” In: *Virtue and Action: Selected Papers*. Eds. J. Annas, J. Reid. Oxford University Press, Oxford 2022, pp. 210–230.

5. Conclusion

The attempt by Delorme, Calidori, and Frigo to de-anthropocentrise the notion of virtue in contemporary environmental ethics is noteworthy. Their use of a unified and simplified terminology aims at a deconstruction of contemporary virtue ethics. However, the extension of the term “virtue” appears misleading from the standpoint of virtue ethics and even of Aristotle, whom they invoke in support of their historical claims. Moreover, their usage often relies on vague definitions and insufficiently supported arguments.

For Aristotle and contemporary neo-Aristotelian virtue ethics, virtues are functional insofar as they are excellences in fulfilling the proper – namely moral – function of human beings. While all excellences are functional, not all are virtues. There is thus no need to retain the unified terminology of ἀρετή; instead, a more precise distinction may be drawn between biological excellence, instrumental excellence, and virtue as moral excellence. For Aristotle, Foot, and Hursthouse, all forms of excellence belong to a single natural (biological) system, yet important differences remain between virtues and other excellences.

This distinction – defensible even on historical grounds – is rejected by Delorme, Calidori, and Frigo. Within an Aristotelian framework, one may speak of amoral and non-human excellences, but not of amoral or non-human virtues, since virtue properly denotes the moral excellence of human action. Although these authors are not entirely mistaken in appealing to Aristotle, they do not fully engage with key conceptual and contextual features of his thought. Their simplified appropriation overlooks central aspects of his natural philosophy, to which Foot and Hursthouse remain more faithful, even if they do not adopt it in full detail.

The *aretological* reading of Aristotle's natural teleology arguably opens the possibility of environmental reflection – albeit anachronistically – a point acknowledged by both ecofeminist and naturalistic virtue ethicists. Yet neither approach attains the conceptual depth of Aristotle's framework, nor do they engage as thoroughly with its metaphysical foundations. To develop environmental implications from Aristotle's natural philosophy would require analysing the natural functioning of non-human beings and objects and refraining from disrupting it through human intervention. Such an approach would aim to preserve the natural course of *aretological* teleological processes – allowing nature to remain as it is, rather than attempting to improve or alter it, since nature itself is oriented toward excellence.

Abbreviations

<i>De An.</i>	<i>De Anima</i>
<i>EE</i>	<i>Ethica Eudemia</i>
<i>EN</i>	<i>Ethica Nicomachea</i>
<i>GA</i>	<i>De Generatione Animalium</i>
<i>Hist. An.</i>	<i>Historia Animalium</i>
<i>Met.</i>	<i>Metaphysica</i>
<i>Part. An.</i>	<i>De Partibus Animalium</i>
<i>Phys.</i>	<i>Physica</i>

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