

ARISTOTLE ON THE INTELLECT AND LIMITS OF NATURAL SCIENCE

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Most present-day philosophers of mind are *physicalists*. When it comes to determining the world's ontology, physicalists privilege the position of those who study the inanimate world and refuse to countenance what is utterly mysterious (i.e., seemingly brute and arbitrary) from the physicist's point of view. This orientation leads to a version of the "mind-body problem." For the concepts we employ to describe thought, conscious perception, and the other states and activities Descartes indelibly marks with the label "mental" do not belong to physics' basic conceptual repertoire. So, assuming that the physicalist doesn't wish to eliminate the mental altogether, she must find a way to effect an explanatory continuity between the world that the contemporary (or future, or perfect) physicist describes and the mental life of living organisms. At a minimum, this continuity consists in a restricted form of the global logical supervenience of mental properties upon physical properties. That is, the mental ceases to be mysterious to the physicist if and only if the totality of our world's true physical facts entails the totality of our world's true mental facts.¹ Though the goal is easily stated, and many physicalists take it for granted, establishing this supervenience claim is no easy task.

Aristotle, unlike the present-day philosopher of mind, faces no special mind-body problem. For according to Aristotle, mental capacities are simply to be placed, with equal footing, alongside other vital capacities (*δυνάμεις τῆς ψυχῆς*) (e.g., respiration and digestion). At most, Aristotle faces a "life-body problem." This life-body problem is not without its obstacles and several of these challenges mirror difficulties that the mind-body problem raises. But Aristotle's framework allows him to sidestep the one obstacle we have already mentioned: he does not have to establish that vital capacities and their activities are intelligible to those who study the inanimate world. For according to Aristotle, the science that studies the inanimate world is the science of nature (*φυσικὴ ἐπιστήμη*) and the individual who practices this science, the student of nature (*φυσικός*), examines that which "is by nature or according to nature" (*φύσει καὶ κατὰ φύσιν*) (*Phys.* II.1, 193a1–2).

The vital activities of living organisms are “by nature” in the relevant sense; their source (ἀρχή) and cause (αἰτία) is an internal principle of movement and rest and such a principle *is* a nature (φύσις) (192b21–33). If this is correct, that is, if the set of facts the student of nature investigates includes the totality of vital facts, then vital facts, including mental facts, supervene trivially on natural facts.

But there is one vital capacity that complicates this picture significantly, namely, the intellect (νοῦς). The intellect occupies an exalted position among the vital capacities. Its possession distinguishes human beings from all other terrestrial organisms, its operation is central to a flourishing human life, and its status as divine is ensured by its being god’s sole activity. One would expect it to be among the most important things for us to understand. But it is a curious capacity. On numerous occasions, Aristotle isolates the intellect for special consideration and what he does say about it often differs from what he says about the other vital capacities (see *DA* I.1, 403a27, 413a5–7 and *PA* I.1, 641a17–18, a23). For example, Aristotle maintains that the intellect is alone among our vital capacities in not being realized physiologically in a proprietary organ (see *DA* III.4, 429b26–27, 430a17–25; I.5 411b15–18; II.1, 413a4–9, b24–27; and *GA* II.3, 736b28). More often than not, Aristotle raises questions about the intellect only to leave them unanswered. Given this peculiar status, it is unclear whether we ought to employ the methods of natural science when we investigate the intellect. To which science, if any, does the intellect’s study belong?

We already have the resources to provide a strong argument on Aristotle’s behalf for the intellect’s inclusion in natural science’s domain. Natural science studies natures and Aristotle is clear that (i) the principle and cause of a living organism’s vital activities, including its intellectual activities, is its form, viz. its soul (ψυχή), and that (ii) souls are natures.

But at one point Aristotle says explicitly that the intellect is *not* to be studied by the student of nature (*PA* I.1, 641a32–b10). In what has come to be known as *the correlatives argument*, Aristotle argues that if the student of nature were to study the intellect, she would be forced to study not only that which is by nature but everything that is intelligible and we should therefore exclude the intellect from natural science’s domain. Aristotle goes on to argue that this exclusion is not problematic because the intellect is not really a principle of movement at all. If this is correct, then it looks like the intellect falls outside the student of nature’s ken. But this exclusion comes at a cost; it throws Aristotle into the same position as the present-day physicalist insofar as it renders a central aspect of our mental lives utterly mysterious from the student of nature’s point of view.

This is an uncomfortable impasse and my aim in this chapter is to reconcile these opposed strains within Aristotle’s thought. I will begin with a thorough presentation and critical examination of the case against the intellect’s inclusion in natural science’s domain. Three principal considerations drive this exclusion. First, the way in which the intellect is related to the body (or, better, the ways in which it *isn’t* related to the body) precludes its naturalistic study. Second, the correlatives argument shows that the student of nature can’t study the intellect

without corrupting natural science's boundaries. And third, natural science studies movements and their principles and the intellect is not a principle of movement and rest. I will argue that this third consideration is ultimately the most important for Aristotle and that it is the most difficult for those in favor of a naturalistic examination of the intellect to accommodate. I will then defend the view that the student of nature can (and ought to) study the intellect *despite* its not being a principle of movement and rest. More specifically (and more controversially), I will argue (i) that, strictly speaking, the only principle of an organism's vital activities is their specific soul considered as a unitary whole; (ii) that this unitary soul is an organism's nature; (iii) that the student of nature must concern herself with whatever activities are involved in the coming to be, development, and full realization of these natural forms; and (iv) in doing so, the student of nature does not slip into first philosophy (i.e., metaphysics or theology). My positive interpretation depends on two central aspects of Aristotle's philosophy: his account of organic hylomorphism and his account of natural teleology. In addition to answering our guiding question, I hope the following discussion sheds light on these pivotal topics.

1. The case against the intellect's inclusion in natural science's domain

1.1 *The intellect and matter*

The first reason to exclude the intellect from natural science's domain concerns the way in which the intellect is separable from an organism's body (χωριστή τοῦ σώματος). Aristotle recognizes a variety of ways in which one thing is separable from another: in account, in being, in function, in place, in magnitude, in thought, *simpliciter*, and perhaps others as well. What each of these means precisely and the ways in which they relate to each other spark intense debate.² But even before these issues are settled, it is important to note that Aristotle thinks the intellect is, in some sense, separable from body. For the intellect is alone among vital capacities in not being realized physiologically in a proprietary organ or organ system. Sight is realized in the eye, digestion is realized in several organs, primarily the heart, but there is no single organ or dedicated system of organs that comes to be for the sake of the intellect's operation (*DA* III.4, 429a24–27, cf. *DA* II.1, 413a5–7).³

This difference between the intellect and the other vital capacities has consequences for determining which science one ought to employ when one investigates the soul and its activities. For Aristotle divides the theoretical sciences into three main branches – natural science, mathematics, and first philosophy (*Met.* VI.1, 1026a18–20) – and he grounds this taxonomy on the extent and respect in which the objects these sciences investigate are separable from matter. The objects first philosophy studies are separable from matter. The objects mathematics studies are not separable from matter but the mathematician studies them as if



they were by means of a kind of abstraction in thought. The objects natural science studies differ from those of both first philosophy and mathematics: they are not separable from matter and the student of nature studies them as enmattered (*Phys.* II.2 193b31–35, 194b13–14; *DA* I.1, 403b12–16; *Met.* I.3, 995a15–20; VI.1, 1025b27–8, and 1025b30–1026a17).

So, if the student of nature is to study the intellect, it must not be separable from an organism's body in a way that would place it in either mathematics' or first philosophy's purview. As Aristotle says, "it belongs to the student of nature to study soul to some extent, i.e. so much of it as is not separable from matter" (see *Met.* VI.1, 1026a5–6, cf. *DA* I.1, 403a27–28). Does the fact that the intellect requires no specific, dedicated physiological realization entail that it is separable from an organism's body in a way that places it beyond the student of nature's ken?

There are two considerations that suggest we answer this question negatively. First, the human intellect cannot function without a body. For the intellect's operation depends upon the operation of imagination and imagination is necessarily realized materially (see *DA* I.1, 403a8–12, III.7, 431a14–15, b2, III.8, 432a8; and *De Mem.* 1, 449b31). So the human intellect is always "with body ($\mu\epsilon\tau\alpha$ σώματος)" (*DA* I.1, 403a16–17).

Second, the student of nature cannot succeed in understanding living organisms if she ignores the intellect altogether. Aristotle argues that one cannot explain completely several characteristics of an organism's tissues and organs if one does not explain them as coming to be as they are for the intellect's sake. Several characteristics have been suggested as being inexplicable without an appeal to the intellect. It is because of humans' intellect that (i) their lips and tongues are well suited to the formation of articulate speech (i.e., their lips are moist and their tongues are the most detached, soft, and broad), (ii) their blood is conducive to intelligence (i.e., their blood is comparatively thin, cold, and pure), (iii) they possess hands that are particularly useful as instruments in various productive endeavors, and (iv) they possess an upright posture and are therefore bipedal.⁴

The ineliminable appeal to the intellect in the explanation of humans' upright posture is the least controversial of these examples.⁵ Aristotle argues as follows (*PA* IV.10, 686a25–b2). The human intellect, the most divine capacity of soul that humans possess, could not be exercised successfully (i.e., it would be exercised sluggishly) if there were too much weight in the upper region of the organism's body pressing down upon the body's lower region. So in order for a human to come to be and exercise its intellect successfully, it cannot have much bodily weight pressing down in this way. And anything that does not have much bodily weight pressing down in this way has an upright posture. So humans' posture comes to be as it is because it must come to be this way if the human is to function properly and thereby realize its form completely.

So it is wrong to say that "man is as complete and explainable a thing as other animals are, without taking account of intellect" (Balme 1992, 89). Upright posture and the features it entails, such as our unique form of bipedalism, are among humanity's differentiae – they are features that distinguish humans from all other



living organisms – and if the student of nature were to prescind from the intellect altogether, she could not explain either the presence of these features or the physiological happenings that bring them about.

1.2 *The correlatives argument*

We have shown that the intellect cannot function without, and is therefore not absolutely separable from, body and that the student of nature cannot neglect the intellect altogether. However, even though these two considerations are powerful, they do not settle whether the student of nature is to study the intellect. The student of nature may, and occasionally must, appeal to the intellect in her explanations, but whether she is to investigate theoretically the intellect itself remains unanswered. Aristotle addresses this further question directly in *the correlatives argument*.

In the *Parts of Animals*' introductory chapter, Aristotle argues that the student of nature ought to study a living organism's soul more than its matter (*PA* I.1, 641a15–31). In the course of this argument, he raises (though does not immediately endorse) the possibility that it is not the soul in its entirety, but only some part of the soul, that is an organism's form and nature (641a17–18, 28). He then turns to the intellect and appears to use this possibility to argue directly for the intellect's exclusion from natural science's domain. He says,

In view of what was said just now, one might puzzle over whether it is up to natural science to speak about *all* soul, or some <part>, since if it speaks about all, no philosophy is left besides natural science. This is because intellect is of intelligible objects, so that natural science would be knowledge about all things. For it is up to the same science to study intellect and its objects, if they truly are correlative and the same study in every case attends to correlatives, as in fact is the case with perception and perceptible objects.

(641a32–b4)

This argument reduces the assumption that natural science studies all of the soul to absurdity by showing that it entails the patently false claim that natural science is the only variety of philosophical inquiry. We can reconstruct the argument as follows.

- I Assumption for *reductio*: Natural science studies all of the soul.
- II The intellect is a part of the soul.
- III So natural science studies the intellect.
- IV The same science studies correlatives.⁶
- V The intellect's correlative (i.e., what intellect is of) is intelligible objects.
- VI So natural science studies intelligible objects.



- VII But the objects of every philosophical investigation, viz. “all things,” are intelligible.
 VIII So natural science studies the objects of every philosophical investigation.
 IX So no philosophy is left besides natural science.

The correlatives argument brings two key premises together: the claim that the same science studies correlatives and the claim that the intellect is *of* all things. Few would now endorse the former premise, but Aristotle maintains this view throughout his corpus (for example, at *Cat.* 7, 8a36–b15 and *DA* II.4, 415a14–22). And the latter premise is a central feature of Aristotle’s account of the intellect. For the intellect “thinks all things” (*DA* III.4, 429a18) and through its exercise “the soul is in a way all the things that are” (III.8, 431b21). Everything that is can be thought of and everything that can be known is intelligible (or can be derived from that which is intelligible). So if natural science studies the intellect, it will study the objects of mathematics, first philosophy, ethics, politics, rhetoric, and every other variety of philosophical inquiry that yields knowledge.

One sign that this argument is off track is that it justifies a position much stronger than its stated conclusion. For we could substitute any philosophical investigation for natural science in the initial assumption without altering the remainder of the argument. So if first philosophy studies the intellect there is no philosophy left besides first philosophy and if ethics studies the intellect there is no philosophy left besides ethics, etc. If the correlatives argument is sound, there is no means by which we could investigate the intellect scientifically that would not be an investigation into everything that is.

Fortunately, the argument fails by Aristotle’s own lights. Aristotle allows for more than one science to study the same objects as long as they treat the objects differently. We have already seen that natural science and universal mathematics study the same objects; natural science studies them *qua* enmattered and mathematics studies them *qua* separable from matter.⁷ This same move allows Aristotle to countenance sciences with domains that comprise everything that is; a science can study everything that is, as long as it considers only one aspect of the things that are. In fact, Aristotle already accepts that there is such a science. Aristotle describes first philosophy as the science of being *qua* being; it is a science of everything that is but, when it studies something, it restricts its focus to “both what it is and the attributes which belong to it *qua* being” (*Metaph.* E.1, 1026a23–32; cf. Γ.1). First philosophy’s scope is universal, but this does not, nor should it, lead Aristotle to worry that it precludes other varieties of philosophical inquiry.

Similarly, Aristotle can maintain that the science that studies the intellect, whatever it turns out to be, will indeed study everything that is. But it does not follow that there will be no philosophy besides this science. For the intellect’s correlative is being *qua* intelligible. This leaves plenty of room for other varieties of inquiry and other kinds of knowledge. So if the theoretical investigation of the intellect belongs to natural science, natural science will indeed study each and everything



that is. But when it does so, it will consider what they are and the attributes that belong to them *qua* intelligible.⁸

1.3 *The intellect as principle of movement*

The correlatives argument does not establish that natural science cannot study the intellect. But the case for the intellect's exclusion from natural science's domain is not complete. Immediately after Aristotle presents the correlatives argument, he gives another, much simpler, argument for the same conclusion. He says,

Or <one could argue that> it is not the case that all soul is an origin of change, nor all its parts; rather, of growth the origin is something present even in plants, of alteration the perceptual capacity, and of locomotion something else, and not the intellectual capacity; for locomotion is present in other animals too, but thought in none. So it is clear that one should not speak of all soul; for not all of the soul is a nature, but some part of it, one part or even more.

(*PA* I.1, 641b4–10)

According to this argument, natural science studies natural movements and their principles or origins. The explanations of a living organism's natural movements (i.e., the explanations of the natural changes in quantity, quality, and location that are characteristic of living organisms) need not (and often do not) include the intellect.⁹ So the student of nature need not study the intellect.

One could push back against this conclusion by arguing that it conflicts with the explanations of human locomotion Aristotle provides elsewhere.¹⁰ Aristotle says that the intellect, in the form of practical reason, conceives an object as a practical good and thereby brings about a desire that moves the reasoner. Unfortunately, even in these discussions, Aristotle appears to relegate the intellect's contribution to a secondary status. The possibility of irrational action implies that the intellect is not *necessary* for human locomotion. More importantly, the intellect's primary role is to serve as an aid to desire, so it is not *sufficient* for human locomotion either. "There is one thing which produces movement," says Aristotle, namely

the faculty of desire. For if there were two things which produced movement, intellect and desire, they would do so in virtue of some common form; but as things are, the intellect does not appear to produce movement without desire . . . and desire produces movement even contrary to reasoning.

(*DA* III.10, 433a21–25)

As Balme notes correctly, the intellect is not "a moving cause of man except indirectly, in the way that the universe's prime mover moves it, by arousing desire" (Balme 1992, 89).

So the intellect is neither necessary nor sufficient for an organism's vital movements. And since the student of nature studies a part of the soul only if it is an internal principle or origin of movement, she will not study the intellect.¹¹

2. The case for the intellect's inclusion in natural science's domain

2.1 A "simple" argument

So there is a significant obstacle to the intellect's inclusion in natural science's domain: the intellect is not a principle of movement and natural science studies only that which is "by nature or according to nature" (*Phys.* II.1); that is, natural movements and the internal principles of movement that are their source. But there seems to be an equally compelling argument that the intellect *is* to be studied theoretically by the student of nature.

Victor Caston offers "a simple (perhaps simple-minded) argument for thinking the intellect *is* part of the form of the human body" (Caston 1996, 180). He says,

- I The intellect is part of the human soul.
 - II The human soul is identical with the form of the human body.
 - III [So t]he intellect is part of the form of the human body.
- (*ibid.*, 180)

This argument is clearly sound. The human soul comprises three principal parts – the nutritive, the perceptual, and the rational – and the intellect belongs to the rational part of the human soul. And Aristotle maintains that a living organism's soul *is* its form. So a human's form comprises the intellect.¹²

We can extend this argument to the conclusion that the student of nature studies the intellect.

- IV A living organism's form is a nature.
- V So a human's nature comprises the intellect.
- VI Natural science studies natures.
- VII So natural science studies something that comprises the intellect.
- VIII If a science studies something, it studies all that it comprises.
- IX So natural science studies the intellect.

According to Aristotle, the "form indeed is nature more than the matter" (*Phys.* II.1, 193b6–7) and an organism's form, its soul, is life's principle (i.e., it is the formal, final, and efficient cause of those activities that exhaust what it is for the organism to live).¹³ So if the intellect belongs to an organism's form, it will also belong to an organism's nature.

But this argument is question begging in at least two places. Against premise IV, one can maintain that an organism's soul is not a nature; only some parts

of the soul are natures or compose a nature. That is, the soul's nutritive part is an internal principle of an organism's threptic and reproductive movements and the soul's perceptual part is an internal principle of an organism's locomotive and perceptual movements, but the soul's rational part is not an internal principle of any movements at all. And even if one grants that the student of nature studies the soul and that the soul comprises the intellect, one can maintain, against premise VIII, that natural science need not study every part of soul, but only those parts that are sources of movement. So if we are to include the intellect in natural science's domain, it will require a better argument.

2.2 The unity of soul and the soul as nature

If the student of nature is to study the intellect, there must be something wrong with the claim that she can study only some part or parts of the soul. I will argue against this position in two stages. First, I will argue that the student of nature's ultimate focus is not natural movement but those beings who have internal principles of movement and rest (§II.2.1). Second, I will argue that the principle of each of an organism's vital movements and activities is the organism's unitary soul considered as a whole (§II.2.2).

2.2.1 What natural science studies

Aristotle offers numerous descriptions of what the student of nature studies:

- (i) what is or exists by nature (*Phys.* II.1, 192b8, 12, 193a1–2, b3, 6)
- (ii) what is or exists according to nature (192b35, 193a1–2, 32–33)
- (iii) what is constituted naturally (192b13)
- (iv) natural objects (193a10)
- (v) the natural (192a32–33)
- (vi) natural compounds (193a36)
- (vii) magnitude, motion, and time (III.4, 202b30; *DC* I.1, 268a1–4)
- (viii) the qualities and forms of things insofar as they are inseparable from perceptible matter (II.2, 194b13–14; *Metaph.* VI.1, 1025b27–1026a17; *DA* I.1, 403b12–16)
- (ix) what is capable of movement (I.2, 185a12–13; *Metaph.* VI.1, 1025b27–1026a17)
- (x) “some genus of being, namely that substance which has the principle of change and rest in itself” (*Metaph.* E.1, 1025b18–21)

Some of these descriptions are meant to fix natural science's domain; others are meant merely to describe salient and important characteristics of that which belongs to natural science's domain. Nevertheless, this list brings two features into relief as being of special interest to the student of nature: (i) those changes

that things are capable of by virtue of being enmattered – qualitative movement, quantitative movement, and locomotive movement – and (ii) that which can change in these ways by virtue of an internal principle of movement and rest. But which of these is natural science’s primary focus? The answer, it turns out, makes no small difference to our guiding question.

On the one hand, if we take natural movements to be primary, the following procedure for determining natural science’s domain seems plausible. First, list all the natural movements, and second, list all the natural capacities that, when exercised, result in these movements. If this procedure fixes natural science’s domain, the intellect will be absent. For, as we have already seen, all the natural movements an organism undergoes by virtue of its soul – vital quantitative change (growth), vital qualitative change (perceptual alteration), and vital locomotive change – can be explained without an appeal to the intellect.

On the other hand, if we take natures to be primary, that is, if natural science studies natural movement only because natural science studies a specific class of beings, namely, beings who possess internal principles of movement and rest, it remains an open question whether the intellect belongs to natural science’s domain. Perhaps the student of nature must study the intellect if they are to study the human soul even if the intellect, when considered as a part of soul, does not itself issue in any proprietary movements.

We can determine which is the correct orientation if we consider the significance of the oft-repeated methodological precept with which Aristotle begins the *Physics*: we ought to begin our inquiries with what is obvious, especially with what can be known simply through perception, and only then proceed to discover that which is comparatively unclear but is ultimately explanatorily fundamental and constitutes the basis of genuine knowledge (*Phys.* I.1, 184a16–21. Cf. *DA* II.2, 413a11–12; *Metaph.* VII.3, 1029b3–12; *EE* I.6, 1216b26–35, and I.7, 1217a19–20). What is comparatively clear to us is that there is movement and that some movement has a source that is internal to what moves. But the knowledge to which we aspire concerns the principles of this movement. As Aristotle says, “systematic knowledge of nature must start with an attempt to settle questions about principles” (*Phys.* I.1, 184a14–15). We will possess this knowledge if we come to understand both the principles by virtue of which movement in general is possible and if we come to understand the primary cause and principle of natural movement in particular (i.e., natures).

So the student of nature concerns herself with movement and ought to begin her inquiry by focusing her attention upon movement. But what is prior with respect to the explanations of a completed natural science are natures and those substances whose movements arise from them. It remains an open possibility, then, that the intellect is included in natural science’s domain. That is, if the study of a human’s nature demands that we study the intellect, then the intellect will be included in natural science’s domain even if the totality of humanity’s vital activities are the exercises of sub-intellectual capacities that we share with other animals.



2.2.2 *The soul as unitary nature*

I contend that the soul's unity entails that the study of human nature does indeed require the study of the intellect. Aristotle raises questions about the unity of soul in the opening book of *De Anima*. He asks,

since knowing, perceiving, opining and further desiring, wishing, and generally all other modes of appetite, belong to soul, and the local movements of animals, and growth, maturity, and decay are produced by the soul, we must ask whether each of these is an attribute of the soul as a whole, i.e. whether it is with the whole soul we think, perceive, move ourselves, act or are acted upon, or whether each of them requires a different part of the soul?

(I.5, 411a26–b2)

Though there is a sense in which it is appropriate to speak of the soul as comprising parts, Aristotle is clear that “the soul is one” and that this unitary soul considered as a whole is the source of each of an organism's vital activities (411b5–14). To do otherwise, that is, to think of the soul as being fundamentally a collection of parts or capacities, is to render unintelligible how the soul could ever serve as the principle and cause of an organism's bodily and functional unity. Moreover, the entire soul is present as a unity throughout the body (411b14–27). Even though our capacity to see is localized in the eye, “in each of the parts is present all the parts of soul” (411b25). That is, the entire soul is present as the principle and cause of those movements that are the exercises of capacities that are localized in an individual's diverse organs and organ systems.

This is a somewhat surprising answer. Why invoke the notion of parts at all if an organism's vital activities and movements have the entire soul as their principle? The parts of soul are a privileged subclass of our vital capacities. Isn't it right to say that our digestive movement is the exercise of our nutritive capacity and that our perceptual movement is the exercise of our perceptual capacity?

The answer to this last question is, of course, yes. But an affirmative answer does not preclude there being a single internal principle of our vital movements. It would be a mistake not to attribute nutritive *capacities* to animals. But when an animal exercises its nutritive capacity, this activity does not have a nutritive soul as its principle. *The principle of an animal's nutritive activities is a perceptual soul*. Everything an animal does has its one and only soul as its principle and end. So feeding is one of the ways in which the animal's single soul, a perceptual soul, is actualized. Similarly, it would be a mistake not to attribute both nutritive and perceptual capacities to humans. But when a human exercises her nutritive and perceptual capacities, these activities do not have nutritive or perceptual souls as their respective principles. *The principle of a human's nutritive and perceptual activities is a rational soul*.¹⁴





This fits well with Aristotle's general understanding of teleology with respect to beings with natures. The soul is the internal principle and cause of those movements and activities that are the manifestation of a living organism being what it is (*DA* II.4, 415b12–14). Since “for living beings, to be is to live” (415b13), the soul is the principle of those activities that are the exercises of an organism's vital capacities. And as it is with most natural unities, the final, formal, and efficient causes of a living organism's vital movements coincide. For,

the soul is the cause and first principle of the living body . . . the soul is cause as being that from which the movement is itself derived, as that for the sake of which it occurs, and as the essence of bodies which are ensouled.

(415b9–12)

So insofar as a soul is a nature, one can't understand the soul's activities without understanding them as occurring for the sake of a form, namely, the soul itself.

There is one and only one internal principle of movement and rest within living organisms. Strictly speaking, the only principle of an organism's vital movements and activities is their specific soul considered as a unitary whole. And Aristotle says that, “it is for the same science to know that for the sake of which and the end as well as what is for the sake of these” (*Phys.* II.2, 194a27–29). So the student of nature must concern herself with whatever activities are involved in the coming to be, development, and full realization of this natural form. Every vital movement of a human being is a partial realization or perpetuation of their human (i.e., rational) soul. For the student of nature to neglect the intellect is for her to misconstrue the formal end of a human's natural movements. These movements are not all for the sake of the intellect, but they are for the sake of a unitary soul that comprises intellect. Aristotle is correct when he says that “our reason and intellect are the end of our nature” (*Pol.* VII.15, 1334b15). But this is because reasoning and intellection are the distinctive activities that mark our specific way of living and our natural end is to live (and therefore be) in precisely this way.

3. Conclusion

The interpretation I have defended, that the student of nature is to study the intellect insofar as she studies the unitary form for the sake of which a human comes to be as it is and act as it does, fits well with many of the claims made in our presentation of the case against the intellect's inclusion in natural science's domain. Given our preferred interpretation, it is no surprise that there are characteristics of an organism, say, upright posture, that cannot be explained without an appeal to the intellect as part of the form for the sake of which man's generation and natural development occur. And it is equally unsurprising that the correlatives argument is, in numerous respects, a resounding failure.



But Aristotle does give the correlatives argument. What are we to make of the several arguments Aristotle provides in *Parts of Animals* I.1 against the natural scientific study of intellect? I contend that these arguments, like many other arguments Aristotle advances, are not put forward as arguments Aristotle himself endorses.¹⁵ They are challenges to the position he ultimately wishes to maintain.

This becomes clear once we note that, immediately after he presents these arguments, he offers the key to their dismissal.¹⁶ He says,

But we say “this is for the sake of that” whenever there appears to be some end towards which the change proceeds if nothing impedes it. So it is apparent that there is something of this sort, which is precisely what we call a nature.

(*PA* I.1, 641b23–26)

I have argued that it is this very invocation, the invocation of a variety of teleological explanation that is only applicable to natural unities, that allows Aristotle to view the totality of an organism’s vital movements as arising from a single, internal, principle of movement and rest and as occurring for the sake of a specific, unitary form. Aristotle makes the strongest case he can for the intellect’s exclusion from natural science. But given his view that souls are natures and that these unitary natures are the ends for the sake of which all of an organism’s vital movements occur, we must, and Aristotle does, reject these arguments.

So Aristotle’s account of how natural teleology is operative in living organisms allows our intellectual activities and the soul that is their principle to be intelligible to those who study the inanimate world. The intellect may be difficult to understand, but it is not utterly mysterious to the student of nature.

Notes

- 1 More precisely, the claim is true if and only if for any logically possible world *W*, if all and only the positive physical facts true of our world are the physical facts true of *W*, then all and only the positive mental facts true of our world are the mental facts true of *W*. Chalmers aptly calls explanations that establish such a supervenience claim “*mystery-removing* explanation[s]” (Chalmers 1996, p. 48). He says, “logical supervenience removes any *metaphysical* mystery about a high-level phenomenon, by reducing any brutality in that phenomenon to brutality in lower-level facts.” (*ibid.*, p. 50; cf. Jackson 1993).
- 2 Corcilius and Gregoric (2010) contains a nice discussion of these varieties of separability.
- 3 Victor Caston emphasizes these Aristotelian claims, but goes on to argue that the intellect is realized in the organism’s body considered as a whole in Caston (2000). As we will see, there is a sense in which this claim is correct. But the sense in which it is correct is applicable equally to the perceptual souls of animals and the nutritive souls of plants; we can correctly view each of these types of soul as being realized in their respective organisms’ bodies considered as wholes.
- 4 Sarah Broadie provides this list of features in Broadie (1996, p. 168). On lips and tongue, see *PA* II.16, 659b34–660a8 and II.17, 660a17–27; on blood, see *PA* II.2,



- 648a2–11 and *HA* III.19, 521a2–3; on hands, see *PA* IV.10, 687a8–23; on upright posture, see *PA* IV.10, 686a25–b2, 687a2–5 and II.7, 653a28–32.
- 5 Lennox (1999) offers strong arguments against the suitability of the first three examples. (i) Though articulate speech is required for humans to participate in those cultural and political practices necessary to develop their essentially social intellects (*Pol.* I.2, 1253a9–15), the passages in the biological works that explain the characteristics of the lips and tongue that facilitate articulate speech do not refer to the intellect explicitly and employ a notion of human vocalization that is continuous with that of other animals. (ii) Though human blood is thin, cold, and pure because these characteristics are conducive to perception and intelligence, Aristotle does not mention human intellect explicitly and the principle example he gives is bees – they are bloodless creatures that are nevertheless more intelligent than many blooded creatures given the character of their blood-analogue. (iii) Though humans’ hands enable them to execute their practical intelligence, the sort of practical intelligence at issue in the biological works is one that numerous animals possess.
 - 6 Correlatives are interdependent opposites that are what they are by virtue of standing in a relation with reciprocation. As examples, Aristotle mentions double/half, larger/smaller, master/slave, perception/the perceptible, and knowledge/what is known (*Cat.* 7, 6b27–37).
 - 7 Universal mathematics does not restrict its domain to a particular kind of mathematical objects as, say, geometry and astronomy do, but rather “applies alike to all” (*Met.* VI.1, 1026a24–27).
 - 8 According to Aristotle, every science is concerned with a determinate and proprietary subject genus (*An. Post.* I.28, 87a38, I.9, 76a12; *Met.* VI.1, 1025b18–21) and cannot prove conclusions concerning another science’s subject genus (*An. Post.* I.7, 75b3–14). A science’s subject genus is what the science is about (I.10, 76b22). But there are two senses of “what a science is about.” In one sense, first philosophy and the science that studies the intellect will be about the same beings, viz. everything that is. In another sense, they will have distinct subject genera, viz. what there is *qua* being and what there is *qua* intelligible, respectively.
 - 9 One could justify the parenthetical claim by invoking Aristotle’s precept that “nature does nothing in vain” (*IA* 2, 704b12–705a2). If a living organism’s movement could be explained without the intellect, the introduction of the intellect as a further origin of the movement would be superfluous.
 - 10 Charleton does just this in Charleton (1987) and appeals to *De Motu* 6, *EN* VI.1, and *DA* III.9–10.
 - 11 This argument is related to the first reason we canvassed for excluding the intellect from natural science’s domain. For there is a close connection between being enmattered and being capable of movement. That is, matter is that aspect of a hylomorphic composite by virtue of which it is capable of undergoing movement. This licenses the transition from “they cannot be defined without reference to movement” to “they always have matter” (*Met.* VI.1, 1026a2–3). And it is why Aristotle’s tripartite division of the theoretical sciences can also be cashed out in terms of movement: (i) the objects first philosophy studies are “both separable <from matter> and immovable”, (ii) the objects mathematics studies are considered “*qua* immovable and *qua* separable from matter”, and (iii) the objects natural science studies “are inseparable from matter and not immovable” (1026a6–17).
 - 12 On the intellect as part of the human soul, see *DA* I.1, 402b9–14, II.2, 413a23–25, III.4, 429a10–11; *PA* I.1, 641b4–10; and *EN* I.7. On the identification of an organism’s soul with its form, see *DA* II.1, 412a19–21, a27–28; *PA* I.1, 641a17–18; and *Met.* VII.10, 1035b14–16.
 - 13 On the priority of nature as form over nature as matter, see *Phys.* II.8, 198b8–19, 199a30–32; *PA* I.1 640b29; *GC* II.9, 335b35–336a1; and *Met.* IV.4, 1015a13–15. On





- the soul as life's principle, see *DA* I.1402a6–7, II.2, 413b11–13, II.4, 415b8–14, and *Met.* IV.8, 1017b8–11. On the soul (or natures more generally) being formal, final, and efficient causes, see *DA* II.4, 415b8–11 and *Phys.* II.7, 198a25–26.
- 14 I argue for this position in greater detail in Frey (2015).
- 15 Mary Louise Gill arrives at a similar conclusion regarding these arguments in her unpublished commentary on Lennox (2009). See p. 15 fn.25 of Lennox's paper for his response. Despite our shared conclusion about these arguments' role, the case I have made up to this point differs significantly from Gill's.
- 16 There is actually another argument that can plausibly be read as a third argument against the intellect's naturalistic study that comes between the two arguments we have discussed and this statement. This does not alter the present point.

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