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The Powers of Aristotle's Soul



THOMAS KJELLER JOHANSEN

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The Powers of Aristotle's Soul

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By Thomas Kjeller Johansen

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Abbreviations of Aristotle's Works

(Latin titles in brackets)

<i>APo</i>	<i>Posterior Analytics (Analytica Posteriora)</i>
<i>Cat.</i>	<i>Categories (Categoriae)</i>
<i>DA</i>	<i>On the Soul (De Anima)</i>
<i>EE</i>	<i>Eudemian Ethics (Ethica Eudemia)</i>
<i>GA</i>	<i>On Generation of Animals (De Generatione Animalium)</i>
<i>GC</i>	<i>On Generation and Corruption (De Generatione et Corruptione)</i>
<i>HA</i>	<i>On History of Animals (De Historia Animalium)</i>
<i>Insom.</i>	<i>On Dreams (De Insomniis)</i>
<i>Iuv.</i>	<i>On Youth and Old Age (De Iuventute et Senectute)</i>
<i>MA</i>	<i>On the Motion of Animals (De Motu Animalium)</i>
<i>Mem</i>	<i>On Memory (De Memoria)</i>
<i>Metaph.</i>	<i>Metaphysics (Metaphysica)</i>
<i>Meteo.</i>	<i>Meteorology (Meteorologica)</i>
<i>Nic.Eth.</i>	<i>Nicomachean Ethics (Ethica Nicomachea)</i>
<i>PA</i>	<i>On Parts of Animals (De Partibus Animalium)</i>
<i>Phys.</i>	<i>Physics (Physica)</i>
<i>PN</i>	<i>Short Works on Nature (Parva Naturalia)</i>
<i>Pol.</i>	<i>Politics (Politica)</i>
<i>Rhet.</i>	<i>Rhetoric (Rhetorica)</i>
<i>Sens.</i>	<i>On Sense and Sense-Objects (De Sensu et Sensibilibus)</i>
<i>Somn.</i>	<i>On Sleep (De Somno)</i>
<i>SE</i>	<i>On Sophistic Refutations (De Sophisticis Elenchis)</i>
<i>Top.</i>	<i>Topics (Topica)</i>

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Introduction

In *Odyssey* XI, Odysseus travels to the underworld, where he meets with the souls of the dead. They are feeble shadows of their former selves, ‘powerless heads’, Homer calls them. One of them, Achilles, complains ‘I should choose, so I might live on earth, to serve as the hireling of another, of some portionless man whose livelihood was but small, rather than to be lord over all the dead that have perished’ (489–91). Even the mightiest of the dead is weaker than the feeblest of the living. Life is a powerful thing, which gives us a range of capacities, all those Achilles missed and others, the power to fight, run, perceive, think, speak, eat and drink, procreate, and many others. All of these capacities set us apart from the dead and the lifeless. As the Greeks saw it, they all relate to the fact that our souls are (still) in our bodies. But just what are these powers, how do they determine our activities, and how do they relate to our souls and to our bodies? These are philosophical questions taken up by the ancient philosophers—sometimes in response to Homer—and often answered with great care and sophistication.

Aristotle is the chief amongst these ancient thinkers. He rightly stands not just as the father of psychology, but also as the progenitor of faculty psychology, that is the attempt to account for the multitude of psychological phenomena by reference to a few permanent or inborn psychological capacities.¹ This claim is not meant to underplay the importance of Aristotle’s predecessors, the Presocratics and Plato. The Presocratics too thought about powers as fundamental to nature, and applied this notion also to the soul. Hippocrates, if we may trust Plato,² offered a particularly clear example:

Socrates: Consider, then, what both Hippocrates and true argument say about nature. Isn’t this the way to think systematically about the nature of anything? First, we must consider whether the object regarding which we intend to become experts and capable of transmitting our expertise is simple or complex. Then, if it is simple, we must investigate its power (*dunamis*): what things does it have what natural power of acting upon? If, on the other hand, it takes many forms, we must enumerate them all and, as we did in the simple case, investigate how each is naturally able to act upon what and how it has a natural disposition to be acted upon by what. (*Phaedrus* 270c–d, transl. A. Nehamas and P. Woodruff)

¹ Cf. Spearman’s formulation: faculty psychology seeks to represent the countless transient mental experiences by a small number of relatively permanent—particularly innate—different principles. The multitudinous actual events are thus governed by very few “potential” ones’ (1930) 108, quoted by Fodor (1983) 26. I shall use this as my working definition of ‘faculty psychology’ in this book.

² There is no passage in the extant Hippocratic writings which provides a clear source for this view.

Plato followed this programme in *Republic* V, where he explained powers as ‘a class of the things that are that enable us—or anything else for that matter—to do whatever we are capable of doing’ (477c). He proposed for the first time identity criteria for the powers—‘what is set over the same things and does the same I call the same power’ (477d). He applied this notion of powers to the soul, using it both to distinguish knowledge from belief (477d–478c) and to characterize the intellect (532b–c). Aristotle’s psychology relied on these developments. Nonetheless, there is a sense in which Aristotle counts as the first faculty psychologist.³ For it is his achievement for the first time to explain systematically the variety of psychological phenomena in a multitude of different kinds of living being with reference to a few capacities viewed as constitutive of their souls. In recent times, faculty psychology has undergone a revival.⁴ It is my hope that this book will help show why Aristotle takes pride of place in this tradition.

The best way of introducing the role of capacities in Aristotle’s psychology, and therefore also the best way of introducing this book, may be to think of them as principles. Principles, in general, are the basic terms which structure an area of knowledge:

In every systematic inquiry (*methodos*) where there are first principles, or causes, or elements, knowledge and science result from acquiring knowledge of these; for we think we know something just in case we acquire knowledge of the primary causes, the primary first principles, all the way to the elements. It is clear, then, that in the science of nature as elsewhere, we should try first to determine questions about the first principles. (*Phys.* 184a10–16, transl. T. Irwin)⁵

Psychology is the inquiry into the nature of the soul (*DA* 402a7–8). The aim is to define what the soul is, its essence. By grasping its essence, however, we can hope to understand other affections of the soul and of living beings insofar as they have soul (402a8–10). Aristotle understands the relationship between the essence and those other psychological features along the lines of the relationship between the principles of its science and its conclusions (*DA* 402b25–403a2, cf. 402a20–22). This is a model of scientific explanation developed in the *APo*. I consider how the model applies to the soul in Chapter 2 of this book.

To cast the capacities in the role of the principles, in this model, is to present them as explanatorily basic in relation to other facts about the soul. It is also, for Aristotle, to suggest a certain view of the composition of the soul whereby the capacities play the role of elements with other features derived from them. This is because Aristotle thinks that those features that enter into the essence of something are the same features that are explanatorily basic in relation to its other attributes.⁶ We expect therefore that if the capacities are explanatorily basic, then they are also constitutive of the essence of the soul. To see the capacities of the soul as its principles is then also, in Aristotle, to

³ Fodor (1983) 6, 101–2, mentions Aristotle, with Plato, as forerunners of faculty psychology.

⁴ Due in large part to Fodor (1983).

⁵ For discussion of the passage, see Irwin (1990) 3.

⁶ As shown by Charles (2000).

entertain a certain view about their role in the composition of the soul. It is, in other words, to draw a certain picture of the architecture of the soul. This architecture is the subject of Chapter 3.

The model of scientific explanation applies to the soul primarily because it applies to nature, and living beings are part of nature. Natural beings are characterized by having within them principles of change and rest. Aristotle understands these principles as the fundamental causes of their change and rest. It is characteristic of natural beings that they have within them such causes in four of the senses of ‘cause’ which he recognizes, namely, the formal, final, efficient, and material causes. All of these causes play the role of a principle of scientific demonstration for natural beings. As Aristotle shows in *DA* II.4, living beings fall under this scheme: the soul provides the formal, final, and efficient causes, the body the material cause. The notion of a capacity is, for Aristotle, fitted to this role. As I try to show in Chapter 4, a capacity is primarily a causal notion: a capacity is a principle of change. We might say that to analyse the soul in terms of capacities is to show it as a cause—formal, final, or efficient—of the various ways in which a living being changes by virtue of being alive. In this way the analysis of the soul into capacities is part of a programme of explaining living beings as natural beings. This is the primary sense in which Aristotle’s psychology is ‘naturalistic’, to use a current term.

When we say that the soul is a principle this means, in the first instance, that it is a principle of living beings, by virtue of which living beings live. This point highlights the close conceptual connection for the Greeks between having life and having a soul. For Aristotle, as for other ancients, the most fundamental feature of the soul was that it was the cause of life. For many ancients having a soul was also associated with having reason or perception. So, notably, Plato understood the soul as essentially rational. Animals while they were not fully rational still had a degraded form of rationality in having perception or belief or both. Even plants were seen by Plato as alive by virtue of having a kind of perception. Other ancients focused more on the ability of living beings to move and highlighted the soul’s role in causing motion. These two features would sometimes be interpreted together as in Plato’s account of soul in the *Phaedrus* and the *Timaeus*. But whether rationality or mobility or both was thought the hallmark of the soul, it was also believed that such a soul would bring about life.

It is true that even in antiquity there were attempts to separate having a soul from having life. So some Hellenistic philosophers took the soul to be reason, but allowed for things to have life that did not have soul, referring in these cases to nature as a source of life.⁷ Aristotle was of the opposite camp: ‘living is being for living beings, and the cause and principle of this is soul’ (*DA* 415b13–14). To explain the soul and its various activities is then also to explain what is fundamental to living beings and to biology. Psychology should then be seen as lying in between two disciplines: the study of nature in

⁷ So Panaetius, according to Nemisius (τὸ δὲ σπερματικὸν οὐ τῆς ψυχῆς μέρος, ἀλλὰ τῆς φύσεως, *De Natura Hominis* 15.72.11), cf. Long (1999) 563, n.10; cf. also Galen, *On the Natural Faculties* I.1.

general is presupposed by it, since psychology takes its explanatory model from natural philosophy; however, psychology is also itself a presupposition for Aristotle's study of living beings, his biology, in ways I consider in more detail in Chapters 13 and 14.

Aristotle complains that Plato limited psychology to the study of the human soul. In a way this is unfair since Plato in the *Timaeus* attempted to explain how a variety of life forms arise with different souls and bodies to match. But in another way the criticism is fair, since other living beings were presented as human souls who had degraded their reason and been reincarnated in lower forms. In terms of capacities, we could say then that Plato focused on one, that of reason, and viewed other capacities as somehow derivative from it. For Aristotle, however, it is clear that if the soul is to explain the full range of life behaviours, then other capacities, alongside reason, need to be introduced as principles. His trump card against Plato is the nutritive capacity: while perception and other cognitive activities might in some way be considered low-grade forms of reason, the capacity to replenish the body cannot. Plants show that nutrition can be found without any of the cognitive capacities, so it must be fundamentally different. The capacities play a key role, then, in accounting for the variety of life forms.

For Aristotle, the cognitive faculties, perception and intellect, are subject to the same explanatory paradigm as nutrition and locomotion. While he makes extensive use of artefacts as analogies for living beings,⁸ to understand the soul in its various functions we need to make essential mention of the ways the soul causes living beings to be alive. On this point, Aristotle's thinking sharply contrasts with the modern practice in artificial intelligence (AI) of modelling the mind on machine functions without essential reference to biological contexts. Despite their different biological frameworks, he bears a closer relationship to modern evolutionary psychology in viewing psychological faculties as mechanisms by which specific kinds of organisms ensure their survival in specific environments.

Faculty psychology has to accommodate two potentially competing interests. On the one hand, the capacities have to be adequate to the task of explaining the variety of psychological phenomena we find in the world. As Aristotle saw it, reason is not sufficient to explain the variety of life forms: we need at least nutrition and perception as well. On the other hand, the motivation behind faculty psychology is also to maintain a minimum of basic capacities, since the explanatory strength of the theory comes from the ability to show how a multitude of psychological features are caused by a few capacities, just as we might say more generally that the explanatory strength of a science's principles is in inverse proportion to their number. Faculty psychology has to steer a course between explanatory redundancy, positing too many capacities, and reductionism, positing too few to adequately account for the phenomena.

Aristotle, as I shall try to show, is well aware of these constraints. His account of perception is a prime example. He demarcates the perceptual capacity from the other

⁸ The example of automatic puppets to illustrate animal locomotion is a particularly striking example (MA 7 701a2–32).

capacities in terms of its own distinctive objects. The perceptual capacity as such is independent from the other capacities. However, once demarcated the perceptual capacity, can be used to explain a wide range of other perceptual phenomena, such as accidental perception, imagination, apperception, dreaming, remembering, which involve further processing of the information provided by the perceptual capacity, as I argue in Chapters 9 and 10 of this book. We end up in the *DA*, and the psychological and biological works that follow it, with a remarkably rich account of a variety of psychological behaviours based on just a handful of fundamental capacities.⁹

However, given that several basic capacities are required to explain the life behaviours of animals and humans the question arises of the relationship between them. Can the capacities be conceived of independently of each other or do we need to define them in relation to the work they do within the whole living being? Are they operationally independent from each other or do they only execute their functions through cooperation? These are questions which, if taken in a very general form, are familiar from modern discussions of faculty psychology. So Jerry Fodor views mental faculties as ‘modules’, which are ‘domain specific’, that is deal with one specific kind of information, and ‘informationally encapsulated’, that is process their information independently of other information in the system.¹⁰ Fodor does not think that modules account for all mental processes. He takes modularity to hold only at the lower level of cognition, such as basic sense perception and language recognition. Higher-order cognition, meanwhile, is not modular, but holistic, since it needs to be flexible and have access to all sorts of information. The difference between what is modular and what is not also marks the difference between what is properly subject to cognitive science and what is not.¹¹ Not all philosophers would agree with Fodor about what mental modules are and how far they extend. Daniel Dennett, for example, takes modularity to apply also to higher cognition.¹² Dennett’s modules, however, are less rigid and more flexible than Fodor’s. They are ‘just units with particular circumscribed competences’. They may in certain circumstances take on additional functions, and are therefore not strictly domain specific.

Given such significant differences of opinion between modern philosophers of the mind about the nature and extension of mental faculties, and given the variety of roles

⁹ Aristotle, on this point of economy, compares favourably with Thomas Reid’s 43 *mental* faculties, cf. Hergenhahn (2008) 192.

¹⁰ Fodor (1983) 70: ‘the informational encapsulation of the input systems is the essence of their modularity’.

¹¹ Fodor (1983) 128: ‘Global systems are per se bad domains for computational models, at least of the sorts that cognitive scientists are accustomed to employ. The condition for successful science . . . is that nature should have joints to carve it at: relatively simple subsystems which can be artificially isolated and which behave, in isolation, in something like the way that they behave *in situ*. Modules satisfy this condition; Quinean/isotropic-wholistic-systems by definition do not. If, as I have supposed, the central cognitive processes are nonmodular, that is very bad news for cognitive science.’

¹² Dennett (1991). On the debate about the extent of the modularity, see further Fodor (2000) vs. Pinker (1999).

assigned to them within modern cognitive psychology, detailed comparisons with Aristotle's psychology will be complicated, and possibly misleading. However, we can see at least in outline a similarity in the general issue of whether faculties are modular or holistic. Aristotle defines the capacities of the soul with respect to discrete objects. Nutrition, perception, intellect are essentially the same across different kinds of living beings.¹³ As parts of the soul, moreover, Aristotle ascribes definitional priority to the capacities over the whole soul, as I argue in Chapter 3, which helps explain why Aristotle approaches the definition of the soul in the *DA* by accounting for its various capacities separately. From the point of view of their essential activities, then, capacities enjoy a kind of modularity, understood in terms of domain specificity and operational independence. However, it is also clear that Aristotle seeks to integrate the capacities with each other in his accounts of the further functions of the soul and its relationship to the body in different kinds of living being, as I argue in Chapter 14. The question of the modularity or holism in Aristotle has to be related to different contexts of explanation: when the *DA* defines the capacities as constitutive parts of the soul, the approach is modular, when using them, as in the biological works, to explain a further variety of life behaviours in different living beings the approach is holistic. The difference is reflected in a distinction between two kinds of teleology in Aristotle: one refers to the goals that define the capacities as such, the other to the goals that the capacities realize for the living beings that have them. Aristotle has the explanatory resources to accommodate both modularity and holism.

Two criticisms, which have dogged faculty psychology,¹⁴ have no doubt also led to an underestimation of Aristotle's achievement. One is that psychological faculties lead to 'homuncularism', whereby the faculties are each conceived of as independent agents.¹⁵ The objection is sometimes made against Plato's psychology;¹⁶ indeed Plato seems himself to have courted it (*Republic* IX 588d). It is not clear that homuncularism in any form whatsoever needs to present a problem for faculty psychology.¹⁷ Aristotle is keen to emphasize the unity of the living being: we should say, for example, that it is we who think with our souls, not our souls which think, let alone our intellects (*DA* 408b5–15). He also sees a problem with the division of the soul into capacities that are ontologically or spatially independent. Proponents of the view that different mental

¹³ Dissociation, the situation in which one capacity can be lost and the other retained, is sometimes used as evidence for modularity. As Kim Sterelny puts it, 'dissociation seems to show both informational and operational autonomy', Sterelny (2003) 212–13. Where modern evolutionary psychology understands such dissociation historically, Aristotle's perspective is synchronic.

¹⁴ For a historical survey see Hergenhahn (2008).

¹⁵ Cf. Locke (1975) II.xxi.6: 'I suspect, I say, that this way of speaking of faculties has misled many into a confused notion of so many distinct agents in us, which had their several provinces and authorities, and did command, obey, and perform several actions, as so many distinct beings; which has been no small occasion of wrangling, obscurity, and uncertainty, in questions relating to them.'

¹⁶ Cf. Shields (2007) 62.

¹⁷ Dennett (1991) 261–2 holds that, by theorizing about how larger functions can be accomplished by organizations of units performing smaller functions, all species of functionalism can 'be viewed as "homuncular" functionalism of one grain size or another'.

faculties can be identified by discrete areas of the brain, or bumps on the head, would find little succour in Aristotle. However, he does not think that the *definitional and causal* separation of the capacities properly understood creates problems for the unity of the soul. Rather, as I argue in Chapter 3, he thinks that such a separation is a precondition for understanding both how the souls of living beings differ from each other and how they each form a unity of parts.

The other traditional criticism is that explanations in terms of powers or faculties are vacuous: to say that something is F's because of its power to F is simply to re-describe the cause in terms of the effect.¹⁸ This is the objection famously dramatized in Molière's *La Maladie Imaginaire*, where a doctor claims that opium makes you sleep because of its sleep-inducing capacity (*virtus dormitiva*). As is increasingly recognized, this objection fails both in general and as an objection to Aristotle.¹⁹ Since Aristotle wishes his powers to be genuinely explanatory of our psychological activities,²⁰ he is well aware of the need to articulate their causal role in ways that are non-circular. As formal, final, and efficient causes, the psychological capacities are genuinely informative, as shown also by the way these causes entail specific material conditions. In showing the variety of ways in which the capacities of the soul work as a cause, Chapters 6 to 8 of this book could be read as an extended response to the *virtus dormitiva* objection.

The various capacities of Aristotle's psychology have been intensively studied since antiquity. More recently books and numerous in-depth articles have been published on each of the capacities considered in this book and their various functions. Every area of the *DA* has thus been surveyed and mined with controversy, and here I have had to tread over much lightly. What is distinctive about this book is the focus on the explanatory roles of the soul's capacities *as such* within Aristotle psychology. Aristotle's psychology, I argue, is premised on a coherent model with the capacities of the soul as the basic explanatory principles. It is a model articulated in Aristotle's natural philosophy and applied first to the soul and then, through his psychology, to his biology. This approach may appear in tension with another picture of Aristotle, favoured by some scholars,²¹ of a less systematic and more empirically-orientated and flexible thinker. I have already indicated how empirical adequacy is one of the constraints on Aristotle's faculty psychology. Moreover, the thought that Aristotle shifts from a modular approach to life functions in the *DA* to a more holistic approach in subsequent works is supposed to reflect the need for wider explanatory resources to explain the wealth of

¹⁸ Cf. Albrecht (1970) 36.

¹⁹ Cf. Woodfield (1976); and Hankinson (1998) 131 who points out that this objection applies only if 'the potentiality to F is all we can say about the faculty'.

²⁰ Contrast Locke (1975) II.6.20: 'For faculty, ability, and power, I think, are but different names of the same things: which ways of speaking, when put into more intelligible words, will, I think, amount to thus much;—That digestion is performed by something that is able to digest, motion by something able to move, and understanding by something able to understand. And, in truth, it would be very strange if it should be otherwise; as strange as it would be for a man to be free without being able to be free.'

²¹ Geoffrey Lloyd (1996) is an outstanding example of this approach.

empirical observations that enter into Aristotle's biology. 'Systematic vs. empirical' is, then, in this context a false opposition. However, it should be admitted that my approach leads to silence on many particulars of Aristotle's psychology, which somebody writing on Aristotle's theory of nutrition or perception or intellect or locomotion in its own right ought to address. So, to take two examples, I try to articulate similarities and differences between the nutritive and the perceptual capacities in their roles as final, formal, and efficient causes in a way that might seem unmotivated if one was focusing on each individually, while, on the other hand, I leave out a wealth of details about how the five senses individually operate. Similarly, in the discussion of *phantasia*, being concerned to show its dependency on the perceptual capacity as such, I omit much material on its role in memory, dreams, and locomotion. These are limitations which I hope will appear justified to the reader in view of the fundamental question addressed in this book: how the notion of powers structures Aristotle's psychology.

1

Circumscribing the Soul: *De Anima* 1.1 and 2.1

The objective of the *De Anima* is to gain knowledge of the nature of the soul and of the attributes that follow from its having this nature. It is clear that for Aristotle there are different ways in which one might know something. So when he argues in *APo* I.1 that all learning proceeds from previously existing knowledge he presupposes that one has different kinds of knowledge before and after one has learnt. However, knowledge in the strictest sense is theoretical knowledge, whose object is the definition of a substance. When Aristotle says in *DA* that the study of the soul is valued for its contribution to knowledge, it is clear that he has this kind of knowledge in mind. For, first, he says that we prize knowledge of the soul highly because it is among the most precise (402a2), a point that would only apply if the account of the soul met the highest standards of knowledge. Second, he uses for ‘to know’ the verb often translated as ‘to contemplate’ (*theôresai*), where contemplation has its object eternal and necessary objects. Third, he makes it clear that the object of the knowledge of the soul is ‘what it is’ (402a13, 17), the expression Aristotle uses for that which corresponds to the definition, often referred to also as the ‘essence’.

The aim, then, is to gain knowledge of the soul by defining its essence. However, Aristotle sees a problem in finding the right method by which to define the soul. This problem relates to the question he discusses in the *APo* as to how we gain knowledge of principles. He draws the distinction there between the sort of knowledge we can have of the conclusions and the sort of knowledge we can have of the premises of demonstrative arguments. The conclusions are known by being demonstrated from the premises. The premises—at least the most basic ones within each branch of knowledge—cannot themselves be demonstrated. Rather they are known by another form of insight (*nous*). Aristotle seems in the *DA* to assume this distinction when he says (402a15) that the method for knowing the attributes that follow from the thing’s nature is demonstration (*apodeixis*), whereas the method for knowing the thing’s essence is not similarly clear. He returns to this distinction later in Chapter 1:

It seems not only useful to know (*gnônai*) the ‘what it is’ in relation to knowing (*theôresai*) the causes of the consequent attributes of substances (just as in mathematics it is useful to know what the straight and the curve are, or what a line and a plane are, in relation to understanding how

many right angles the angles of a triangle are equal to), but also in return the consequent attributes contribute in great part to knowing the 'what it is'. For when we are able to render an account in accordance with the appearance (*phantasia*) of the consequent attributes, either all or some of them, then we shall also be able to speak excellently about the substance. For the 'what it is' is the principle (*arkhê*) of all demonstration, so that it is clear that all those definitions are said dialectically and vacuously which neither contribute to our knowledge of the consequent attributes, nor facilitate even conjectures about them. (402b16–403a2)¹

The passage takes a page, or rather several pages, out of the *APo*. First, it shows that Aristotle sees the definition of the soul as a principle to be used in demonstrating its other attributes.² Moreover, again in line with the *APo*, the object of definition is presented as the *cause* of the consequent attributes.³ Next, he indicates that a grasp of the other attributes of the soul can help us clarify the definition of the soul. For when we have grasped the definition we shall be able also to demonstrate the consequent attributes. This reflects the point made in the *APo* that, while the definition may not itself be demonstrated, the demonstration will be conducted through the essential definition. The method of demonstration, while not directly leading to the discovery of the definition, can therefore serve as an aid in identifying the essential definition.⁴ For we know that we have found what is essential to the soul when we are able to demonstrate through it its other necessary attributes.⁵ As we shall see, Aristotle in *DA* II.2 follows the method of identifying the essential features of the soul through those features which will explain its other necessary attributes. This is the answer to the question raised in *DA* I.1 (402a11–22) about the method by which to discover of the essence of the soul.

It is clear that for Aristotle there are different kinds of definition appropriate to different kinds of thing (402a19–23). So it is appropriate that before attempting to define the soul we should have a general idea of the sort of thing that we are looking for. This, I take it, is why Aristotle proceeds to say that it is first necessary to distinguish in the most general terms what sort of thing the soul is, and that means in the first instance placing the soul in one of the categories and identifying it as a fulfilment (*entelekheia*) or capacity (*dunamis*), the most general terms available for characterizing anything.⁶ I.1, 402a23–6:

First, [1] it is probably necessary to distinguish in which of the kinds the soul is and what it is, I mean whether it is a this something (*tode ti*) and substance (*ousia*) or a quality or a quantity or some other of the categories which have been distinguished; and further [2], whether it is one of the things that are in capacity or rather a fulfilment (*entelekheia*), for it makes no little difference. [3] It is necessary also to inquire whether the soul is with or without parts, and whether every soul is uniform or not. If it is not uniform, [we should inquire] whether it differs in species or in genus. For as it is, those who speak and inquire about the soul seem to consider only the human soul.

¹ Unless otherwise stated translations in this book are mine.

³ Cf. *APo* II.10 93b38–94a9.

⁴ Cf. *APo* II.8 93b15–21.

⁵ Cf. Charles (2000) 200–9.

⁶ Cf. *Metaph.* A.5.

² Cf. *APo* I.2 72a7.

However, we need to pay attention to whether there is one account of the soul, just as there is of animal, or whether there is a different account for each species, such as of horse, dog, man, and god, where the animal taken generally is either nothing or something posterior, in the same way as another common [predicate] might be predicated. Furthermore, if there are not many souls, but parts of soul, is it necessary to inquire into the whole soul first or into the parts? But it is difficult also to define these, which are by nature different from each other, [4] and whether it is necessary to inquire into the parts before their activities (*erga*), for example, thinking before the intellect and perceiving before the perceptual [part], and similarly in the other cases. But if it is necessary to inquire into the activities first, again somebody might wonder if the objects should be inquired into before these, for example the perceptible before the perceptual part, and the intelligible before the intellect. (*DA* 402a23–b16)

The passage presents a checklist of questions which structure Aristotle's inquiry into the soul in *DA* II.1–4. In *DA* II.1 he addresses the sections I have marked [1] and [2], in *DA* II.2–3 he considers section [3], and in II.4 section [4]. By answering these questions we are able move from an outline account of the soul towards more specific and informative accounts of the various kinds of soul in the rest of *DA*. That is, the answers to these questions give us a notion of the kind of the thing the soul is, such that we in the remainder of the *DA* can provide accounts of the right sort for defining the essence of the soul.

The first constructive step is taken in *DA* II.1, where Aristotle offers the 'common' (412b4) or 'most common' (*koinotatos logos*, 412a5) account of the soul. The primary sense of 'most common' here is that the account that is common or most common to the various kinds of soul. But there is also a secondary sense in which the account may be taken to be the most 'common'. For it is couched in terms of the ten categories and the distinctions between fulfilment and capacity and 'matter and form', and these are the terms that are most common to all kinds of things. So in *Metaphysics* A.4 Aristotle says that 'there is nothing common (*koinon*) over substance and the other categories' (1070b1–2), with the implication that these categories are the most common terms.⁷ There is a sense, then, in which the account is most common not only in that it applies to all kinds of soul, but also in that it describes the soul in the terms that are most common to things; or put differently, it offers a description of the soul in the most general terms available to somebody who, like us, wants to know the basic sort of thing the soul is.

According to the common account, the soul is 'the first fulfilment of a natural instrumental body' (412b5–6). He arrives at it by a process of division.⁸ The soul is first

⁷ Cf. *Phys.* III.1 200b33–201a1: μεταβάλλει γὰρ αἰὲ τὸ μεταβάλλον ἢ κατ' οὐσίαν ἢ κατὰ ποσὸν ἢ κατὰ ποιὸν ἢ κατὰ τόπον, κοινὸν δ' ἐπὶ τούτων οὐδὲν ἔστι λαβεῖν, ὡς φαμέν, ὃ οὔτε τόδε οὔτε ποσὸν οὔτε ποιὸν οὔτε τῶν ἄλλων κατηγορημάτων οὐθέν.

⁸ Achard (2004) 34–9 speaks of Aristotle using 'la méthode de division' (34), but this is misleading if taken in the sense of the method described in *APo* II.13–14 whereby kinds are determined by genus and specific difference. To mention just one obstacle, Aristotle divides substance into form, matter, and the composite, but one can hardly think of one species as composed out of two other contrasted species. Cf. also *Metaph.* VII.3 1029a30–2 on the compound substance being posterior to form or matter.

identified as substance (rather than quality, quantity, etc.) and then as substance in the sense of form (rather than matter or the compound), and then as form of a body of a certain sort, namely one having life. Factoring in the distinction between fulfilment (*entelekheia*) and potentiality (*dunamis*), the soul as form would be fulfilment (since form is fulfilment) and body as that of which the soul is the form would be potentiality. Fulfilment, in turn, allows of the distinction between first and second fulfilment, the former corresponding to having knowledge, the latter to exercising it (*theôria*). Since soul is present even in the absence of the activity—as when we are asleep—soul is identified as a first fulfilment of a natural body potentially having life. Aristotle then says that such a body would be an instrumental one, and stresses that even the very simple bodily parts of plants should be seen as instruments. On this basis, he then restates the account of the soul, now as the first fulfilment of a natural instrumental body.

As you will have noticed, Aristotle's progression of thought here is compressed in the extreme. Unpacking it requires great care. He assumes several distinctions in the passage and though they are on the surface familiar we should not assume that we understand their application here. Let's start with the following accounts of the soul, which are more or less explicit in the text:

- 1) The soul is the form of a natural body potentially having life.
- 2) The soul is the first fulfilment of a natural body potentially having life.
- 3) The soul is the first fulfilment of a natural instrumental body.

Of these three (3) is presented as the concluding account, and we can see (1) and (2) as steps towards this formulation. If so, however, some basic questions arise about how each of them follows from the previous. Let's start by considering how Aristotle establishes (1). One striking feature of Aristotle's approach is that he seeks to identify the soul in relation to a certain kind of body. He takes substances first of all to be bodies, then, natural bodies, and amongst these living bodies. The fact that these are natural shows that they are compounds of form and matter, and the fact that these bodies have life suggests that the soul likewise is said of the body (rather than the other way around). But if soul is said of body, then it must be form rather than matter (since matter is body). In leaning on this connection between having life and having soul, Aristotle is anticipating the starting point adopted in II.2, that the soul is the cause of life. But at this stage there is no explanation of the relationship between having soul and having life as such; that is to come in II.2. All that is assumed is a correlation: bodies that have life have soul and vice versa.

So far, then, we can see some justification for Aristotle's conclusion at 412a20–21 that the soul is the form of a natural body having life potentially. But why is the body in the definition said to have life *potentially* (*dunamei*)?⁹ The claim may seem to follow immediately from Aristotle's earlier assumption that 'matter is potentiality (or 'capacity':

⁹ I shall soon have more to say about rendering *dunamei* by 'potentially': for now, in order to set up the problem, I use this standard translation.

dunamis) and form fulfilment'. And true enough, in the next sentence Aristotle says that substance is fulfilment and so that the soul is fulfilment of the body (412a21–2), that is, (2) above. So clearly Aristotle is thinking of this kind of body as being in capacity because he thinks that body is aligned with capacity and the soul, as form, with fulfilment. Yet a worry remains with this alignment. How can it be true to say that the body only *potentially* has life? For surely the body of which the soul is the fulfilment has life not just potentially, but actually. If it didn't have life actually it wouldn't be a living body, but if it wasn't a living body, then, as Aristotle underlines, it would only be a body homonymously, in the way a drawing of an eye is an eye only homonymously (412b20–2). So he says, at 412b25–7, that 'it is not what has cast off the soul which is potentially such as to live, but what has [the soul]: and the seed and the fruit are potentially this kind of body'.¹⁰

Now Aristotle is clearly keen to insist, against any materialist opponents, that it is not the body itself or as such that is alive or has life, but rather the living body in virtue of its soul. So when he says that the body potentially has life and the soul is its fulfilment he means to deny that the body is sufficient on its own or as such to be alive or to have life. The body as such only potentially has life and it is the presence of soul that fulfils this potentiality. However, this claim also may seem difficult for Aristotle to maintain against a materialist opponent. For how can this potentiality for life which the body carries with it fail to be sufficient for actual life? Aristotle says that it is the body which has soul which is potentiality such as to live (412b26). But if the body itself brings with it such a potentiality to live it must mean that the body itself is sufficient for the presence of soul. Such a view might seem to be supported by Aristotle's favoured analogy with artefacts: if the matter of the axe corresponds to the eye, the capacity to chop being analogous to the ability to see and actual chopping to actual seeing, then what else is there to having the capacity to chop than being an axe and what else is there to having the ability to see than being an eye, that is, being the matter? But if so, the soul, understood as a first fulfilment, is present given the characteristics of matter. A bottom-up explanation of the soul seems available given the way in which Aristotle seems willing to endow the matter as such with potentiality.

The puzzle, as I have presented it, is the reverse side of a problem brought to our attention by John Ackrill.¹¹ Aristotle's hylomorphism suggests that, in composites of form and matter, the matter can somehow be specified independently of the form. So in the case of the bronze statue the bronze can be described as bronze independently of the fact that it forms the matter of a statue. The matter has certain properties that make it suited to being turned into a statue, and these are properties it has as bronze and retain

¹⁰ Aquinas (1951) §222 suggests that if Aristotle had said that the body had actual life, then he would have implied that the body itself was a form-matter compound. However, Aristotle's claim is put in terms of the body's *having* life, not *being* life, and saying that the body has actual life seems to present no greater threat to the status of the body as matter than saying that it has the form actually. On the contrary, saying that the body has life potentially seems too weak, as we saw.

¹¹ Ackrill (1972).

when part of a statue. Moreover, having the properties that make it suited for being turned into a statue does not require that the bronze become part of an actual statue, as we see from the fact that the same bronze could also have been turned into a tripod. But in the case of living beings, it seems that we can only talk about the matter of the human being insofar as it is actually part of a human being. So a human or animal body deprived of soul is a body only homonymously, that is not really a body at all and so not really the matter of a human being. Correspondingly, in the generation of a human being, the matter only comes to be the matter of a human being once it has been imbued with a human soul. The point at which the matter comes to count as the matter of a human being, that is being potentially a human being, is when it has the human form or soul, no earlier. But if so, one might as well say that the matter of a human being ensures the presence of the soul, which looks like a kind of materialism. The point that the body cannot be specified independently of the soul could be taken to imply, then, that the body itself is sufficient for the presence of the soul.

Now the first question that needs clarification is when it is right to say that some matter is potentially a living being. In *Metaphysics* Θ .7 the criterion applied to natural beings for being X potentially is whether something is such as to be able to turn itself into X if nothing external interferes. Aristotle says that not even the human seed is a potential man since it first has to undergo changes in the female matter before it is such that it is able to turn itself into a human being. In *DA* II.1 Aristotle seems to respect this constraint, for at 412b27 he talks of the seed and the fruit as what are potentially such a body, that is, a body that is potentially such as to live by having soul. Or as one might say, the seed is potentially a body that potentially has life.

A similar conclusion emerges when we consider Aristotle's account of animal generation from the point of view of the female matter. The account shows that two issues I have been considering together here come apart: (a) could this matter have been turned into another kind of compound, the way, say, the bronze of a statue could have been turned into a tripod?; and (b) does the matter out of which the compound was made survive in the finished product? To the first question, the answer, in the case of animal generation, is clearly no. Barring abnormal offspring, the female menstrual fluid can only be turned into human beings. The answer to the second question, however, is a qualified 'yes'. For the menstrual fluid which provides the matter for the embryo when conceived also survives after conception to provide the matter for the growing embryo.¹² Aristotle claims that the female residue 'is potentially the same in character as the future animal will be, according to its nature, and although none of the parts is present in actuality in that residue, they are all there potentially' (*GA* 740b19–21, transl. Peck). We can maintain, then, that there is matter which underlies the transformation from potential human body to actual human body. What is not immediately clear from this is at what level of potentiality this matter is the matter of a human being.

¹² See *GA* II.4 740b5–8.

However, since the female matter both before and after conception is subject to the informing motions of the male, it seems reasonable to say that the continuous matter is not that of the actual human body, but rather the matter of a potential human body, as being potentially the parts of a human body. But if we think of those parts themselves, in the manner of *DA* II.1, as potentially having life, we must cast the continuous matter at the level of potentialities to have life potentially.¹³ We can then find continuous matter in human generation, which counts as the potential matter of a human being, also before generation, but we need to think of this at a lower level of potentiality than the matter of the fully formed human being.¹⁴

But this still leaves us with a question of what it means for the body of the fully formed living being to be *potentially* alive. Given that the soul is present as its fulfilment and this soul is predicated of the body, why do we say that such as body has life potentially, and no more? I think there are two kinds of answer to this question suggested in II.1, answers which ultimately come to the same thing. The first starts from thinking about matter in terms of indeterminacy. Already at 412a7–9 Aristotle says of matter that it is ‘what is not in itself (*kath’ hauto*) something determinate (*tode ti*)’; rather it is in relation to form that something is said to be something determinate. We might think of the matter, then, as what is determinable by form. This translates into thinking of the matter as what has the potential to be such and such. We can think of this as a synchronic relationship: the matter of the human being is potentially a human being insofar as it is such as to be determinable by the form of human being. Clearly other kinds of matter, straw and cloth, say, are not such as to be determinable by the human form. The strategy of *DA* II.1 may be to show how the soul is such as to determine a certain kind of body, a natural body that is itself such that it can be determined by soul. The description of the body as potentially alive points us then towards thinking of the body as the kind of thing that is suited to being determined by the soul.

This notion of the body as potentiality goes particularly well with the passage at the end of *DA* II.2 where Aristotle recapitulates the common account of the soul:

For ‘substance’ is said in three ways, just as we said, of which one is form, the other matter, the third what is made out of both, and of these matter is potentiality, form fulfilment, since what is made out of both is ensouled, the body is not the fulfilment of the soul, but it is the fulfilment of a certain kind of body. And for this reason those suppose correctly who think that the soul neither is without body nor is some body. For it is not body but something of body, and for this reason it exists in body, and in body of a certain sort, and not in the way our predecessors fitted the soul into a body without specifying in which body and in what sort of body, even though it is clear that not any old thing will receive any other thing. But it happens also in this way according to

¹³ This is still functional matter, but matter picked out by its capacity to become human matter, but at a lower level of potentiality than that of the actual living human being.

¹⁴ This kind of point has already been argued for by Freeland (1987) and Lewis (1994); see also Bowin (2011) 154–5.

reason: for the fulfilment of each thing comes by nature to be in what exists in potentiality and in the appropriate matter. It is clear from these considerations that there is some fulfilment and account of something that has the potentiality of being such. (414a14–28)

Aristotle here emphasizes the way in which the body has to be of a certain kind for the soul to be present in it.¹⁵ The soul is the fulfilment of a body with a specific potentiality. The matter has to be ‘appropriate’ (*oikeia*), a term which suggests a level of specificity, and contrasts with the lack of specification offered by the predecessors’ description of the body.¹⁶ It is attractive, therefore, to think of the potentiality of the body as being that of matter which is specifically geared to receiving a particular kind of form. The soul fulfils the body’s potential to be a certain kind of living being in the sense that it makes the body a fully determinate and specific living being, it makes it a *tode ti*, as the opening of *DA* II.1 had it. The body becomes a fully determinate thing, then, by being ensouled. By virtue of being ensouled it has actual life, but by virtue simply of being matter it is not a determinate living thing and so only has potential for life. It is not in its resources as body, in other words, to have actual life, and for that reason the common account of the soul describes the body as having potential life. This looks like a satisfyingly anti-materialist position after all.

However, alongside this aspect of Aristotle’s thinking about how the body potentially has life, there is another, which reflects more precisely the idea that the soul is the fulfilment (*entelekheia*) of the body’s potentiality. The term ‘*entelekheia*’ has often been translated as ‘actuality’, as if it was used interchangeably with ‘*energeia*’.¹⁷ However, as *Metaphysics* Θ.8 (1050a21–3) makes clear, the term refers to the state of something achieving its goal (*telos*), which makes ‘fulfilment’, ‘perfection’ or ‘completion’ more accurate translations than ‘actuality’. When Aristotle describes the soul as the fulfilment of the body’s potential he is therefore thinking of the relationship between soul and body in teleological terms: in having a soul, the body realizes its potential to be a certain kind of living being. The distinction between first and second fulfilment is correspondingly to be read in terms of the degrees with which the soul realizes the body’s potential: in the activity of contemplating, perceiving, taking nourishment, the body’s potential is more fully realized than in merely having the capacity to do these things, though in having the capacity the body’s potential is sufficiently realized for us to say that it has soul and that a living being of a certain kind exists.

Now when Aristotle at 412a26–7 says that ‘knowledge is prior in coming into being for the individual’ he is using a notion of priority which is the flipside of priority in being. As we read in *Metaph.* Θ.8 1050a4–5: ‘the things that are later in coming into being are prior in being (*ousiā*).’ Here Aristotle includes the example of theoretical

¹⁵ The passage echoes Aristotle’s criticism of the Pythagoreans at *DA* I.3 407b13–26.

¹⁶ Cf. *oikeios* at 414b27.

¹⁷ With certain exceptions, such as that of the infinite mentioned at *Phys.* III.5 204a20–1 and III.6 206a14–18, there is a lot to be said for not translating this term by ‘actuality’ either, but rather by ‘activity’, see Beere (2009) 3–4.

knowledge and its activity familiar from *DA* II.1: we have theoretical knowledge in order to engage in the activity of theoretical thinking, rather than the other way around. The activity, while it comes later than the capacity, is thus prior in being as the end of the capacity. Picking out the first fulfilment as prior in time therefore underscores potentiality, first and second fulfilment as teleologically arranged in this order. In terms of the relationship of the body to the soul, the implication is that the body is for the sake of the soul in the way in which potentiality is for the sake of the actuality that fulfils it.

This teleological relationship between body and soul may be understood developmentally: as the embryo develops its potentiality to be a human being it comes closer to the actuality which defines it. But it may also be understood synchronically: the mature body is for the sake of the activities which define it. It is this sort of relationship which Aristotle seems to have in mind when he goes on to say in (3) that the body is instrumental.¹⁸ Instruments are made so as to be able to perform certain functions, so if we say that the body is an instrument and that the soul is the fulfilment of that instrument, it follows that the body is for the sake of the soul, that is, that the soul is the final cause of the body. The teleological conception of the body–soul relationship goes well with the thought that the soul determines the body as a certain kind of thing: for what makes instruments what they are is the function they are designed to serve. So we can say that the bodies of living being are determined by their ends.

However, why does Aristotle think that he can substitute the phrase ‘potentially having life’ in (2) with ‘instrumental’ in (3)? It is possible that (2) and (3) are meant to be no more than co-extensive and that ‘instrumental’ is not supposed to imply ‘potentially having life’ but simply offer an alternative, independent specification of the body which serves the job of specifying what kind of the thing ‘soul’ is. But if so, it is odd that Aristotle after stating (2) immediately adds the notion of instrumentality by saying ‘but such a body would be instrumental’, as if the notion of the body’s instrumentality is somehow linked with the notion of its having potential life. Perhaps the example of the plants is supposed to give us guidance. What the example brings out is that the parts of plants are instruments insofar as they serve a function: the leaf provides protection (*skepasma*) for the pericarp, the pericarp for the fruit, while the roots serve to ingest nutriment (412b1–3). So we may think that what triggers Aristotle’s move from ‘a body potentially having life’ to ‘an instrumental body’ is the thought that an instrument provides the potentiality for the exercise of a certain function. So if life is understood minimally, as at 412a14, in terms of being able to take nourishment and grow and decline, we may think that if plants have parts that serve as instruments in performing these functions, then it follows that the body in this and similar cases

¹⁸ Cf. *GA* II.6 742a27–33: ‘So we have three things: (1) the end, which we describe as being that for the sake of which; (2) the things which are for the sake of the end, namely, the activating and generative, *qua* such, is relative to what it produces and generates; (3) the things which are serviceable, which can be and are employed by the end’.

provides a potentiality for the life functions which the soul fulfils. In other words, Aristotle thinks that instruments are in potentially the functions they can be used to perform, so if the parts of the body are instruments of life functions, it follows that they also have the potentiality to participate in these functions.

We might think that our old problem now rears its head again: instruments convey more than a mere potentiality for a capacity, they provide the capacity itself. For what else is there to having the capacity to chop in the manner of an axe than just being composed of certain matter in this way. However, it is clearly possible to describe an axe in a number of ways that are irrelevant to its ability to chop wood. So I might say that it is yellow, has scratches on top, and that its handle is made out of Indian teak. These are accidental attributes of the axe from the point of view of its function as an axe, though it may be necessary of an axe that it must have a colour, surface texture, and provenance. The point is that it is only by specifying its function that one gets a fix on which of its various material attributes are relevant to its capacity to be used in chopping. We may therefore say that while its various features give the axe the potential to be an axe, to be something that can be employed in chopping wood and such, it is only by specifying the function that one can determine which of these features are relevant. Again, it seems proper therefore to think of the matter as determinable by the function, rather than itself determining the function. So it seems appropriate to say the matter as such provides the potentiality for the capacity that defines the soul rather than the capacity itself.

Consider the same point from the perspective of knowing that something is a certain tool. Television programmes (such as *The Antiques Roadshow*) will sometimes present odd instruments whose function we are invited to guess, before an expert tells us what they really are. A layman may be able to describe quite extensively the material attributes of an instrument, for example, its weight, colour, surface texture, dimensions, and so on. But none of these characteristics may reveal the function of the instrument. However, once we know the function we can see which characteristics are relevant and why, and which aren't. In Aristotelian terms it therefore seems appropriate to say that the material characteristics of the object do not themselves as such determine the function, rather they present a mere potentiality, while the function makes that potentiality determinate. One might say that the epistemic indeterminacy of an object's function from the point of view of its material attributes alone, highlighted by the example, reflects the ontological indeterminacy of its matter considered in separation from its form.

The final version of the common account (3) indicates that the relationship between the body and the soul is that of an instrument and its function. Now in the rest of *DA* II.1 (412b10–413a10) Aristotle tells us more about this relationship. He does so by developing an analogy between the body and tools such as an axe. Aristotle opens this section by saying that the soul is the essence of a body of a certain sort, just as if the natural body were (*ei . . . ên*: counterfactual) one of the tools, like an axe. It may look like the implication of saying 'if the body were one of the tools' is that the body itself is

not really an instrument at all, but just like it. However, we have already been told in (3) that the body and its parts are instruments. And clearly what Aristotle has in mind by tools such as an axe is not all instruments as such but manufactured tools, rather than natural ones. The body is a natural tool; the axe is an artificial one. As Aristotle says, ‘the soul is not the essence and formula of such a body [sc. an artificial one] but of a natural one of this sort having within itself a principle of change and rest’ (412b15–17). This stresses the difference. However, as tools they are sufficiently similar for the artificial tool to tell us something significant about the body.

Aristotle in fact gives us a double analogy before spelling out the point of the axe analogy: the relationship between the soul and the body is also like the relationship between a part of the body and a part of the soul, for example the relationship between an eye and its capacity to see. So the soul is both like the capacity to see and like the capacity of the tool, while the body is both like the eye and the axe:

As then cutting and seeing are a fulfilment so also is being awake, and as the ability to see and the capacity of the tool, so is the soul [a fulfilment]: and the body is what is in potentiality. But just as the eye is eye-jelly and the ability to see, so also in the other case are the soul and the body [together] the animal. (412b27–413a3)

The analogy spelt out reaffirms the teleological relationship: the soul defines the body—is the essence and logos of the body—in the manner of the proper function of a tool with the activity as the highest fulfilment. The implication then is that the definition of the soul is a teleological one: it presents the soul as both the formal and final cause of the body. And, as we saw, it is appropriate in this context to understand the body as a potentiality for the soul, in that it is only because of the soul that it becomes and is a determinate thing, say the body of an animal, or a plant or a human being.

Capacity and Potentiality

Now one question that the last passage presses on us is the relationship between the use of *dunamis* in characterizing the soul, the capacity of the tool, and the ability to see, and the use of *dunamis* in characterizing the potentiality of the body. Aristotle said that: ‘As then cutting and seeing are a fulfilment so also is being awake, and as the ability to see and the capacity (*dunamis*) of the tool, so is the soul [a fulfilment]: and the body is what is in potentiality (*en dunamei*).’ Translators and commentators have tended to keep these two uses of *dunamis* quite distinct: as in my translation here, *dunamis* gets translated as ‘capacity’, *en dunamei* or *dunamei*, as in the common account, is rendered as ‘in potentiality’ or ‘potentially’. We think here of ‘capacity’ as involving change, as explained in *Metaph.* Δ.12 and Θ.1, that is, either as an active principle of change in another thing or in oneself *qua* other, or as a passive principle of being changed by another thing or by oneself *qua* other (1046a9–18). So the axe’s ability to chop would be an active principle of change in wood and such like, while the ability to see is a

passive principle whereby we are changed by colours. Aristotle refers to this use as ‘capacity said in accordance with change’, and I shall accordingly refer to the ‘kinetic’ notion of capacity. Meanwhile, the dative construction is commonly taken as expressing the modal notion of potentiality, as contrasted with ‘fulfilment’ (*entelekheia*) and ‘actuality’ (*energeia*). While the relationship between these notions is often discussed in relation to *Metaph. Θ*, the discussions are rarely brought to bear in any detail on the *DA*.¹⁹ This is a pity both because Aristotle’s account of the soul requires us to clarify the relationship, and because the *DA*’s account of the soul can serve as a test case for one’s interpretation of *Θ*, at least on some readings of this difficult book.²⁰

We might think that a clear marker of the modal as opposed to the kinetic use is the dative construction (*dunamei*) or similar adverbial constructions (e.g. *kata dunamin*). But this is doubtful, since Aristotle opens the common account of the soul in *DA* II.1 by saying that matter is *dunamis* (nominative), and form *entelekheia*. It is clearly this notion of *dunamis* that the dative *dunamei* in accounts (1)–(2) of the soul picks up on. So if the modal notion of *dunamis* is marked by its contrast with *entelekheia*, its use is not confined to the dative construction. We may of course still maintain that where the dative construction occurs we are supposed to think specifically of the modal notion. However, there can be no presumption that the dative indicates just modality in contrast to the kinetic notion, if the nominative can also be used to express both notions.

In brief, I want to suggest that there is a modal aspect to the term *dunamis* which particularly comes to the fore in the adverbial constructions, but also that this use is connected with the kinetic use in such a way that it would be wrong to say that such uses of *dunamis* were modal in contrast to kinetic. Here is the thought. When we say that someone is such and such *dunamei* or *en dunamei*, we mean that, in relation to being such and such, he is in the condition that a capacity makes one be in, and no more. Put differently, since having a capacity (*dunamis*) does not in itself make one exercise that capacity, saying that he is ‘in capacity’ (*en dunamei*) means that he is only, as the standard translation goes, ‘in potentiality’. Again this does not mean that somebody who has the capacity does not also exercise the capacity. But it does suggest that when we specifically say that he is in the state that his capacity bestows on him, no more, he is in potentiality. For a capacity as such puts you in the state of potentiality, no more, with respect to its exercise.

The reason why the capacity is not in itself sufficient for its own exercise is that other factors are required, such as one’s desire and the opportunity to exercise the capacity in the case of active capacities, or external agents or prompts in the case of passive capacities.²¹ If I have learnt carpentry then I have acquired a capacity, which may or may not be realized. By having the capacity I am able to practice carpentry but my

¹⁹ Shields (2009) is an honourable exception.

²⁰ I have expanded on the interpretation of this section in Johansen (2011).

²¹ Cf. *DA* III.10, *Metaph. Θ*.5 1048a10–13.

having the capacity in itself does not ensure or require its actual practice. For the exercise requires also the desire and the opportunity to exercise it. Or if I have vision, a passive capacity, then I have the capacity to see and when there is a light and a coloured object in my line of vision, I will see, if nothing else interferes. But by having the capacity I am *ipso facto* in a state of potentiality with respect to the activity, nothing other than having the capacity is required to be in such a state. So it makes sense to say that the capacity *as such* puts me in a state of potentiality rather than actuality (*energeia*).

Compare Aristotle's discussion in *DA* II.5 of the different uses of *dunamis* (417a21ff). The passage supports my suggestion since it explains the difference between different levels of potentiality in terms of having a capacity. Aristotle uses the example of the knowledge of grammar to distinguish three levels of *dunamis* and fulfilment (*entelekheia*). One level of knowing grammar potentially (*kata dunamin*) is the one that qualifies a human being who has not yet learnt grammar, but who as a human being is *capable* (*dunatos*) of being a grammarian. Another level of potentiality characterizes the person who has acquired grammatical knowledge and is *capable* (*dunatos*) of exercising his knowledge whenever he wants to and whenever there are no external impediments (417b22–8). Aristotle thus uses the notion of being capable to elucidate the modal notion of potentiality. One might say that the different levels of potentiality are expressions of different levels of development of the same capacity: the more developed the capacity the higher the level of potentiality. All of this presupposes that we can elucidate the notion of potentiality in terms of that of a capacity.²²

A parallel point can be made about 'actuality' (*energeia*). When we use the term *energeia* as opposed to *dunamis* in the kinetic way, it is attractive to translate the term 'activity'. The term indicates that the *dunamis* is working or in action (*en ergôi*). So 'seeing', 'running', 'fishing' are the activities of the capacities to see, run and fish. 'Actuality', meanwhile, may be said to be the implied modality of such activities. 'John is fishing' understood as 'John is now engaged in the activity of fishing' normally indicates that he is actually fishing, and not, or not merely, potentially fishing. There is an interpretative question as to whether Aristotle thinks that 'A is actually F-ing' excludes 'A is potentially F-ing'. If so, saying that 'John is fishing' would exclude that he is merely potentially fishing since he would not be potentially fishing at all. There is at least one case, namely, 'God is contemplating', where Aristotle would insist that that activity excludes the potentiality. But this is a rather special case in that God's nature excludes *any* sort of potentiality. I think cases where we are tempted to think that the potentiality survives during the activity are in fact cases where we believe that the capacity persists. So in the case of knowledge we clearly think that the mathematician's capacity for mathematical thought survives throughout episodes of actual thinking. We may also think it is true to say that the mathematician who is actually thinking is also potentially thinking in the sense that he could go on thinking

²² Cf. also *GA* I.19 726b18–20 where it is indicated that semen's being in potentiality (*dunamei*) a living being may be explained in terms of its having a *dunamis*, specifically that of the soul (b23).

or be thinking again on another occasion. Indeed, we may think he comes out strengthened by the experience, and is more likely to engage in successful acts of mathematical thinking for it. But these claims about his potential to think rely on his retained, or strengthened, capacity to think. Indeed we can say that as long as the capacity is retained the possessor has the potential to engage in the activity. It seems fair to say, then, that the modal state of a capacity *as such* is potentiality, while that of activity *as such* is actuality. That is why Aristotle by using adverbial forms of capacity and actuality can indicate modal statuses which tradition has come to know as 'potentiality' and 'actuality'.²³

There are reasons, I have suggested, for reading Aristotle's modal notion of potentiality as an aspect of his notion of capacity: to have the capacity to be or to do or to suffer something means to be potentially that thing or to be potentially doing or suffering it. The term '*dunamis*' used in the contexts where we commonly translate it as 'capacity' does then have a modal implication. Its use implies the presence of at least a potentiality and without the further factors required for its actualization, no more than a potentiality. Or, as I would put it, the *default* modality of a capacity is that of being potentially. Given this close connection, the translations of *en dunamei*, *dunamei*, *kata dunamin* as 'in capacity', 'in the manner of a capacity', and 'with respect to capacity' may be more authentic than the standard 'in potentiality', 'potentially', 'with respect to potentiality'.²⁴ However, I shall continue sometimes to use forms of 'potential' both because it is sometimes useful to have a term that highlights the modal status and for convenience because English lacks a suitable simple adverbial form of 'capable'.²⁵

The term 'fulfilment' (*entelekheia*) or 'in fulfilment' (*entelekheiai*) offers Aristotle a way of characterizing further the relationship between the two modal states. Using the standard translations of *dunamei* and *energeiai*, 'potentially' and 'actually', we might say that the activity is actually what the capacity is potentially or that the capacity is potentially what the activity is actually, but nothing is said thereby about whether actuality or potentiality is prior to the other in any of the recognized senses of 'prior'.²⁶ However, the term *entelekheia* indicates a certain priority relationship. As we have seen, the notion of *entelekheia* is a teleological one.²⁷ So if we say that the thinking mathematician is *en entelekheiai* what the sleeping mathematician is in capacity, we

²³ This is not yet taking a line on whether every ascription of a potentiality to something requires ascribing a capacity to that thing. It is rather an attempt to explain how one might come to conceive of a notion of potentiality in extension of cases of ascribing capacities.

²⁴ The translation the adverbial *energeiai* or *kata energeian* as 'actually' or 'according to actuality' is the correlative of the translation of *dunamei* as 'potentially'. So if we choose to advert to capacity in our translation of *dunamei* we may wish to revise our translation of *energeiai*, correspondingly. In that case, it is natural to opt for the translation 'in activity'. For the activity seems to manifest the capacity in the way Aristotle thinks a *energeia* manifests the *dunamis*. If we ask what a capacity is for it is natural to say that it is a capacity for a certain sort of activity. So sight is the capacity for the activity of seeing, the art of strategy the capacity for engaging the activity of warfare, and so on.

²⁵ 'Capably' tends to apply to actions and imply 'skilfully'.

²⁶ For which see *Metaph.* Δ.11.

²⁷ Whatever we say about the word formation. For recent survey of the options, see Johnson (2005) 88.

are saying that the activity of thinking mathematically fulfils or completes the mathematician's capacity.

It is clear that the notion of *entelekheia* is distinct from that of activity (*energeia*), for while activity is always an *entelekheia*, the reverse need not hold. So, as we saw, in *DA* II.1 Aristotle refers first to the capacity to think or being asleep as a first *entelekheia*, and later to the capacity of the tool and the sense of sight also as an *entelekheia* of a similar sort. While Aristotle could not consistently refer to the *dunamis* of the sleeping mathematician as being in *energeia* he can refer to it as being in *entelekheia*,²⁸ because this term indicates a state of completion relative to another state, which may be another potentiality at a lower level of completion.

Now if it is right to say that Aristotle develops his modal notion of potentiality from his notion of a capacity for change, because he takes the default modality of a capacity to be potentiality, then we can make at least two points about the *DA*. First of all, given that a capacity exists in potentiality unless further circumstances bring about its activity, it is appropriate to think that a soul composed of capacities will as such exist as a kind of potentiality. We might then see the account of the soul as composed of various capacities as a correlate to the way in which the soul exists as a certain sort of potentiality: it exists as a certain sort of potentiality in the manner of capacities to take nourishment, to perceive, to move, and so on.

Secondly, given that it is one thing to be an activity (*energeia*) and another to be an *entelekheia*, it is implied by saying that the soul as such is a set of capacities that it is not thereby as such an *energeia* but not that it is not thereby an *entelekheia*, or at least not that it is not an *entelekheia* in some other way than its activities are. The claim that the soul is a first *entelekheia* of the body is therefore consistent with saying that it is also composed of capacities which are in a state of potentiality with respect to their activities. This answers an initial query one might have about saying both that the soul is composed of capacities (which as such have the status of potentiality) and that is also according to the common account an *entelekheia*, rather than a potentiality: if Aristotle meant to draw our attention to the idea that the common account of the soul puts the soul at the same modal level, so to speak, as the claim that it is composed of capacities, one might expect him to have chosen the phrase 'second potentiality' rather than 'first *entelekheia*'. The answer is that the term *entelekheia* is used of the soul in relation to the body where we want to say it is the completion of the body, while the term potentiality is used for the capacities, in *DA* II.5, when we want to say that the activities are their completion.

Having shown the consistency of *DA* II.5 with II.1 on this point, we can make further use of II.5's discussion of levels of potentiality. Aristotle distinguishes, as we saw,

²⁸ One might object that since *Θ*.6 (to be discussed below) indicates that substance is *energeia* in relation to matter, in cases such as the Herm that has been cut out of the wood, there can be no implication that something is engaged in some activity, comparable to fishing, just because it is said to be in *energeia*. However, the point I am making here is in relation to capacities for change. It may well be that being a substance such as a Herm is a sort of *energeia* in relation to the matter's potentiality to be a Herm. But this, suggests *Θ*.6, is by analogical extension from the activity of capacities for change.

three ways in which something can be said to ‘be a knower’: (1) by being capable of learning, (2) by having learnt and thereby being capable of using one’s knowledge, and (3) by actively using one’s knowledge. Both (1) and (2) attribute ‘being a knower’ on the basis of being capable of ‘changing’ in a certain ways: (1) on the basis of being able to learn; (2) on the basis of being able to manifest one’s knowledge whenever one wants to.

What for Aristotle licensed the claim, I said, that somebody is in capacity a knower is that he is capable of exercising his knowledge, either in the manner of a human being capable of learning or in the manner of a mathematician. This supported the claim that for Aristotle to be F potentially or in capacity is to be understood in extension of the idea of being capable of doing or undergoing a change. However, in the cases we are considering the change is rather peculiar. On Aristotle’s analysis in *Phys.* I, change involves the replacement of an attribute by its opposite. Let’s call such changes ‘o-changes’. As Aristotle emphasizes, both ‘changes’ from (1) to (2) and from (2) to (3) are different from o-changes in that they involve no change of attributes from opposites. Where heating a cup of milk involves changing the milk from being cold to its opposite, hot, teaching somebody mathematics does not involve making him the opposite of what he was previously:²⁹ rather it is a fulfilment of a knowledge he already possessed in potentiality or capacity in virtue of being a human being (417a23–4). Aristotle also describes learning as a change to the thing’s natural state (*epi tas hexeis kai ten phusin*), rather than as a change to a privative disposition (417b12–16). Nor does the skilled mathematician’s exercise of his knowledge mean that he becomes the opposite of what he was: after all, he already had the knowledge that he is now displaying. Here Aristotle speaks of contemplation as ‘a transition to the thing itself and to its fulfilment’ (417b6–7).

The ‘changes’ from (1) to (2) and from (2) to (3) are not changes, then, in the sense of transitions to and from opposite attributes or states, but rather changes in some other extenuated sense or senses. They are, in ways that we shall be looking at in Chapter 8, fulfilments of an attribute already possessed by virtue of a capacity. One feature of such changes as fulfilments, let’s call them generally ‘f-changes’, is that the subject of the f-change does not lose the attribute that is fulfilled. So a man is able to learn mathematics by virtue of being a man—or perhaps more precisely by virtue of being rational, which he is by virtue of being a man—but he does not stop being a man—or rational—by learning mathematics. Nor does a mathematician lose the capacity to do mathematics when he is doing mathematics. As Aristotle says, f-change ‘is a preservation of what is in capacity by what is in fulfilment’, unlike the o-changes which involve ‘a kind of destruction by the opposite’ (417b2–3).

Let us now return to *DA* II.1. The soul is the first fulfilment of a body which has life in capacity, we were told. We were invited to think of the relationship between this

²⁹ This is denied by some: see Chapter 8, p. 161, n.27.

first fulfilment and its exercise as being like the relationship between having knowledge and exercising it. Now the parallel with II.5 suggests that we can also think of the body as being in capacity a living being in the way the human being is in capacity a knower. Indeed, Aristotle says at II.5 that the human being is capable of learning *in the manner of the matter* (417a27). So in both passages we have the three-fold distinction involving matter, knowledge, and its exercise.

Now the pertinent feature of learning is that it does not involve a loss of the property by virtue of which one has the capacity; rather, as we saw, this property is preserved and fully developed. It seems therefore that we can say in a parallel fashion that the body by actually having life also preserves the attributes by virtue of which it is alive in capacity. Therefore there is no tension between ascribing life in capacity or potentiality to the body as such and ascribing actual life to the body by virtue of having soul, any more than there is a tension between saying that a man by virtue of being a man has the capacity to learn mathematics while by virtue of having learnt mathematics he has the capacity to use this knowledge whenever he wants to. The man remains a man even after having learnt mathematics, so what is true of him as a man remains true; similarly, the body continues to be a body with the properties it has as such when actually ensouled.

Now we may still be disinclined to accept this parallel if we focus on the circumstance that the human body is not a human body before it becomes ensouled whereas the man is a man before he becomes a mathematician. This difference reflects the fact that the human body is made the substance it is by the presence of a human soul, whereas a human being is not made what he is by having learnt mathematics. In general, substances cannot *acquire* the attribute which makes them the substance they are,³⁰ so we may say that the sense in which the matter is in capacity having life is not one that reflects that they are capable of *becoming* ensouled.

However, this objection loses much of its force when we consider the case of perception, since an animal is not only born with the second-potentiality perception, but is also defined as an animal by having perception. Aristotle thinks the animal acquires the capacity to perceive while the embryo develops (II.5). So we may say that the embryo while developing is both acquiring the capacity to perceive and becoming the kind of thing it is naturally by acquiring this capacity. The peculiarity of this case, then, is that the living being develops alongside the development of the capacity from first to second potentiality. Since the case of perception is supposed to be illuminated in *DA* II.5 by the case of knowledge, it seems it cannot be an obstacle to our extending the analysis of knowledge also to the soul in its relationship to the body, that the soul only comes to be in the development of the capacity, for that too is true in the case of perception.

³⁰ This is, of course, not the same as saying that something cannot become a certain substance. The point is that something cannot already be a certain substance and then acquire the attribute that makes it that kind of substance, one reason why Aristotle thinks that generation is different from nutrition (416b16–17).

Nonetheless, we may feel that this developmental model fails to account for the way in which the body is in potentiality what the soul is in fulfilment, given that the accounts of the soul in *DA* II.1 are also meant to apply to the mature living being. While it may be right to say, as I have argued, that the body of a living being can be seen as preserving its potentiality to live, as the mathematician retains his capacity to learn mathematics because he is still a human being, we may still worry that the claim that the soul is the fulfilment of a body potentially having life cannot mean to refer to the ability of body *qua* body to acquire life, or life functions, since it already has them.

This crux is well-known from discussions of *Metaph.* Θ , where Aristotle seeks to extend the way in which we use ‘capacity’ (*dunamis*) and ‘activity’ (*energeia*) in relation to change to other cases. He clearly wants to maintain that we can talk of the matter as being in capacity the substance of which it is matter. However, before we can understand this claim we need to articulate a notion of being in capacity whose fulfilment is not an activity of changing or being changed. This is the move Aristotle makes in Θ .6. He indicates that the way in which substance is the *energeia* of matter is different from the way in which change is the *energeia* of a capacity, yet is importantly analogous to the latter. The presumption seems to be that by focusing in the right way on the change–capacity relationship we can extrapolate the features which help us understand the substance–matter case. Aristotle exemplifies the analogy through five examples:

- 1) As what is building stands to what has the capacity to build so . . .
- 2) what is awake stands to what is asleep,
- 3) what is seeing to what has eye-sight but has shut its eyes,
- 4) what has been separated out of the matter to the matter,
- 5) what has been worked up from what has not been worked up.³¹

The cases fall into two groups: (1)–(3) as examples of how change stands to capacity and (4)–(5) as illustrations of the relationship of substance to matter. One might think (4)–(5) also illustrate changes, namely the change whereby the substance comes into being from some matter. However, the perfect tense forms which Aristotle uses to refer to the substance clearly indicate that we are supposed to think of the finished product rather than something which is causing or undergoing some change. This is of course compatible with saying that we think that it is important to their status of *energeia* that they are the product of a change; they are clearly products which fulfil the capacity of the material to become such and such a thing. Nonetheless, their status as substance does not involve causing or undergoing change.

It is significant, from this point of view, that Aristotle in (1)–(3) chooses examples of changes that are, as I have called them, *f*-changes. The *energeia* are not really activities that involve change in the ordinary sense; rather they are fulfilments. This helps us with

³¹ As Beere (2009) 191–5 argues, it is the first case, which forms the basis of the analogy, but this stills allows us to see roughly two kinds of case involved (1)–(3) and (4)–(5).

the notion of a perfected substance as an *energeia* since we are led to the thought that for something to be in *energeia*, it does not have to become different from what it already is. Rather it seems it may simply be that we can think of an *energeia* in such cases as a fulfilment. Nor, conversely, does something which is in capacity have to be such that its fulfilment involves losing the capacity, or the feature that grounds that capacity, for example as being human grounds the capacity to learn. These points should not be obscured by the fact that (4)–(5) pick out the substance and the matter at different times, after and before the production of the substance, since, as we saw the relationship of being the *energeia* of the matter is not one that is realized in the process of making the matter enformed but in the state of the finished, perfected product. *Θ*.6 gives us then a notion of being in activity which is premised on the thought of being a fulfilment of a capacity, but not a fulfilment realized by becoming different.

Looking back at the earlier parts of *Metaph.* this alignment of *energeia* with *entelekheia* should not surprise us. In *Metaph.* *Δ*.7 Aristotle listed the different ways we talk about being, drawing the same distinction as in *Θ*.6 with the same examples, but using *entelekheia* for the activity side of the relationship.³² Fulfilment was the term contrasted with *dunamis* at the beginning of *Θ*.1 before Aristotle then rephrased the distinction in terms of capacity and activity.³³ In *Θ*.4 he drew the connection between *energeia* and *entelekheia* in etymological terms: ‘the term “activity” (*energeia*), which is composed in relation to fulfilment (*entelekheia*), and deriving most of all from changes is applied to other cases. For it seems that activity most of all is change.’³⁴ The same thought is developed in *Θ*.8, where Aristotle says that: ‘the work (*to ergon*) is an end, and the activity (*energeia*) is the work,’³⁵ which is also why the name “activity” is said according to the work and points towards (*sunteinei pros*) the fulfilment.’³⁶ The full thought here seems to be that since works are amongst ends,³⁷ and the activity is the work, the activity too is an end. This explains not just why *energeia* derives its name from *ergon*, but also the way in which *energeia* involves the thought of a fulfilment. There is good

³² *Metaph.* 1017a35–b8: ἔτι τὸ εἶναι σημαίνει καὶ τὸ ὄν τὸ μὲν δυνάμει ῥητὸν τὸ δ’ ἐντελεχείᾳ τῶν εἰρημένων τούτων· ὁρῶν τε γὰρ εἶναι φαμεν καὶ τὸ δυνάμει ὁρῶν καὶ τὸ ἐντελεχείᾳ, καὶ [τὸ] ἐπίστασθαι ὡσαύτως καὶ τὸ δυνάμενον χρῆσθαι τῇ ἐπιστήμῃ καὶ τὸ χρώμενον, καὶ ἡρεμοῦν καὶ ᾗ ἤδη ὑπάρχει ἡρεμία καὶ τὸ δυνάμενον ἡρεμεῖν. ὁμοίως δὲ καὶ ἐπὶ τῶν οὐσιῶν· καὶ γὰρ Ἑρμῆν ἐν τῷ λίθῳ φαμέν εἶναι, καὶ τὸ ἥμισυ τῆς γραμμῆς, καὶ σίτον τὸν μήγω ἀδρόν. πότε δὲ δυνατόν καὶ πότε οὐπω, ἐν ἄλλοις διοριστέον.

³³ *Metaph.* 1045b32–1046a2: ἐπεὶ δὲ λέγεται τὸ ὄν τὸ μὲν τὸ τί ἢ ποῖον ἢ ποσόν, τὸ δὲ κατὰ δύναμιν καὶ ἐντελέχειαν καὶ κατὰ τὸ ἔργον, διορίσωμεν καὶ περὶ δυνάμεως καὶ ἐντελεχείας, καὶ πρῶτον περὶ δυνάμεως ἣ λέγεται μὲν μάλιστα κυρίως, οὐ μὴν χρησιμοτάτῃ γέ ἐστι πρὸς ὃ βουλόμεθα νῦν· ἐπὶ πλεόν γάρ ἐστιν ἡ δύναμις καὶ ἡ ἐνέργεια τῶν μόνον λεγομένων κατὰ κίνησιν.

³⁴ *Metaph.* 1047a 30–2: ἐλήλυθε δ’ ἡ ἐνέργεια τοῦνομα, ἣ πρὸς τὴν ἐντελέχειαν συντιθεμένη, καὶ ἐπὶ τὰ ἄλλα ἐκ τῶν κινήσεων μάλιστα· δοκεῖ γὰρ ἡ ἐνέργεια μάλιστα ἡ κίνησις εἶναι, ...

³⁵ ‘Work’ is an appropriate translation of the Greek *ἔργον* also because it is ambiguous between the activity of working and its result.

³⁶ τὸ γὰρ ἔργον τέλος, ἣ δὲ ἐνέργεια τὸ ἔργον, διὸ καὶ τοῦνομα ἐνέργεια λέγεται κατὰ τὸ ἔργον καὶ συντείνει πρὸς τὴν ἐντελέχειαν.

³⁷ One might in principle take τὸ γὰρ ἔργον τέλος to mean the work is *the* end, and so as an identity claim, but Aristotle’s careful use of the article with the subject complement to make such a claim in the following proposition, ἣ δὲ ἐνέργεια τὸ ἔργον, suggests that its omission here is deliberate and significant.

evidence, then, that Aristotle takes the notion of fulfilment as implied in that of an *energeia*.³⁸ Moreover, since he thinks that the *ergon* in a change is the most obvious case of a capacity's being fulfilled he also thinks that the kinetic case can be used to illuminate more general cases of fulfilments of capacities, even where these do not specifically involve something being changed.

Now the argument of *Θ*.6 was meant to communicate a broader notion of activity applying both to changes and substances, such that we in turn could elucidate the notion of capacity involved in the substance case by reference to this broader notion. This capacity Aristotle ascribed to matter. The next step he pursues in *Θ*.7, therefore, is to consider how matter is to be understood as being substance in capacity. It is worth underlining how he approaches this question, namely in terms of *when* we say that some matter is in capacity F. One might think that this is a significantly different question from asking *what* it is for some matter to be in capacity F.³⁹ However, if the argument so far has been correct the notion of *energeia* in terms of which the capacity of matter is now to be understood is that of fulfilment. We might say therefore that the notion of being in capacity will be a developmental notion: what it is to be in capacity F is to be at some point in the development towards being fully F. So insofar as it is clear what it is to be in F in fulfilment, we may appropriately ask at what point something is close enough to being F in fulfilment to count as being in capacity F. Here the answers turn out to be different for different kinds of thing: in the case of living beings we say that the matter, say, the seed, is only potentially a human once it has the ability under its own steam to become a human being, if nothing interferes, whereas in the case of artefacts we say that the matter is a house, say, in capacity, if there is nothing in this which prevents its being turned into a house. The different answers clearly reflect the way we see living beings, in capacity or in activity, as having the principle of change within themselves (the seed does not yet have this), while artefacts have the principle of change outside of them, and therefore need to be understood as having in capacity or in activity the ability to be changed by a craftsman from without.⁴⁰

In both cases Aristotle adopts a diachronic perspective according to which the matter is seen as being in capacity before it is turned into a certain substance. The diachronic perspective is a particularly vivid one since we see the various levels of matter's development rolled out before us in stages, as if in a movie. However, there is no

³⁸ To recall the earlier discussion, this is not to say that the notion of fulfilment implies *energeia*. One might object, however, that since *Θ*.6 states that substance is *energeia* in relation to matter, and, according to *DA* II.4, the soul is both substance and *entelekheia* of the body, it follows that the soul is also the *energeia* of the body. However, there is no contraction between viewing the composite substance as the activity of the matter and distinguishing within the substantial form between the capacities in virtue of which the substance is able to engage in its various activities and the activities as such.

³⁹ For a helpful account of the distinction, see Charles (2010) 171–2. The answer I develop involves taking the temporal question as a way of posing the question about minimal conditions since the case of becoming is, for Aristotle, the most perspicacious way of showing that being in capacity is a teleological notion.

⁴⁰ See Frede (1994) 188–90.

need to think that what it is about matter that qualifies it as a substance in capacity is indexed to this temporal process. Indeed, we might understand the temporal process as dependent on a non-temporal order: this is the way developing into a human plays out over time because these are the stages of manifesting a capacity that are closer and closer to being a human in fulfilment. However this may be, it is clear that the diachronic perspective is not Aristotle's only take on matter in *Θ.7*. For he also offers a view on matter as substance in capacity which applies to the matter that already is part of a certain substance, the 'concurrent' matter. So he talks of the relationship that obtains between a box and the wood it is made of. One response to this kind of example is to see an extension of the diachronic model. So Michael Frede argued that what justifies saying that the matter of the box is the box in potentiality is the fact that it could be turned into, not this box, but another such box. On this account, being in capacity a box relies on the potentiality to become a box. However, there is a difficulty with this suggestion. As scholars have noted,⁴¹ there is a range of cases where the matter does not retain its capacity to be turned into another substance of the sort it is part of. So the matter of an animal cannot be turned into another such animal. This would require decomposition of the body to the point where it would no longer be the matter of an animal. Nor can an ingredient of a cake be taken out of the cake to make another, or generally mixtures in which the ingredients have by being mixed lost those properties that made them suitable for entering the mixture in the first place. While the point could then apply to certain cases, like the box, it does not generalize.

Another suggestion made by Stephen Makin is that the concurrent matter qualifies as the substance in capacity insofar as it composes the substance. However, here the worry is the opposite one, that this answer will not generalize to the diachronic cases: the ingredients which went into the cake will have changed so much that we cannot say *they* compose the finished substance. One might reply that there are clearly some properties of the concurrent matter which are retained from before; however, it is not clear that these are the properties that constitute either the matter's ability to be turned into this substance, or the concurrent matter's capacity to be part of this substance. So, for example, what makes the jelly suitable matter for a trifle seems not to be the attributes gelatine leaves and water had before they were mixed. So we still have not found, it seems, a general basis for saying that the matter is the substance in capacity which applies both to the matter before and after the creation of the substance.

Let's look a little more closely at Aristotle's discussion of the wooden box. The box is made of wood, but we do not say that it is wood, but rather that it is wooden. Or to generalize we refer to the matter of completed compound substances as 'that-en' (*ekeinon*) rather than 'that thing' (*tode*). Now first, this gives us a way of distinguishing between the wood that is in capacity a box, but is not yet the matter of a completed box, and the wood that is in capacity a box, but is the matter of an actual box. The

⁴¹ Charles (2010) 172 for one.

applicability of the adjectival form, wooden, golden, and so on rather than the substantival form, wood, gold, to the compound offers us as a way of distinguishing whether the matter is in capacity F in virtue of being part of something actually F or as being in capacity F but not yet F.

Second, the reason why this verbal criterion works is that it reflects an ontological difference between the matter before and after it becomes part of the box. Before the wood becomes that of an actual box, the wood still exists in actuality as wood but only in capacity as a box. That is why it is right to use the substantival form 'wood' of it: it exists as a subject of predicates in its own right. However, when the wood becomes part of an actual box it is now part of another substance, the box. Moreover, as matter, it is not a part of the box that determines it as such: that would be the shape and form of the box. The adjectival, rather than the substantival, expression, is therefore appropriate: it indicates that the matter does not exist in its own right as a subject of predicates but is said in relation to another thing, its form, which makes it the substance it is. So it is the box, the substance, that is wooden rather than the wood that is box-en or boxy.⁴² The adjectival form indicates the dependency of matter on something else which plays the role of substance.

Aristotle points out that this characterization of matter as dependent on something else for being what it is assimilates 'matter' to 'affections' (*pathê*): 'it is only right that "that-en" (*ekeinon*) is said both in accordance with the matter and the affections: for both are indeterminate' (1049a36–b1). Like the affections, matter is said in relation to a substance because it is only determined as such and such by being related to a certain substance. An affection such as 'healthy' only means something specific when attached to a certain kind of thing, a healthy drink differs from a healthy walk, for example. Similarly, the matter of something is indeterminate until determined as the matter of a certain substance, a determination for which the form is responsible.⁴³

This way of thinking of matter as indeterminate in relation to a certain substance is of course compatible with thinking of it also as having certain specific properties that make it determinable by the substance. It is exactly the properties of wood as wood that make it suitable for being shaped in the manner of a box. This wood could also be turned into a chair or a cupboard, so in this way it is indeterminate in relation to what will make it into, specifically, a box. However, even in cases where the matter is only suitable for one outcome, we may insist that it as matter is indeterminate. It may be, for example, that asphalt is only useful for one thing, surfacing roads, but in terms of its material properties (weight, adhesiveness, colour, etc.) this is still indeterminate in relation to this specific substance. The key point seems to be that the matter should, in the context of viewing it as being in capacity, be viewed as indeterminate in the manner of a

⁴² See Beere (2009) Chapter 11 for an illuminating account.

⁴³ Cf. *Metaph. Z.17* 1041b6–8: 'Why is this individual thing, or this body in this state, a man? Therefore what we seek is the cause, i.e. the form, by reason of which the matter is some definite thing; and this is the substance of the thing.'

determinable, where being a determinable involves having certain positive attributes, which do not as such select for a certain form.

There is an obvious parallel between this view of matter as a determinable and the genus as a determinable by a specific difference. Aristotle assimilates the genus to matter and the species to form on the basis of the way the genus is differentiated by the species.⁴⁴ In his account of change,⁴⁵ Aristotle requires that the patient of a change should already prior to the change belong to the same genus as the agent, since only then can the latter make the patient specifically like itself. The parallels underscore the point that matter to be determinable by form already has to bear a certain basic similarity to the form.⁴⁶

Now, returning to *Θ.7*, Aristotle imagines that there is a series of terms, such as earth, bronze, statue, in which earth stands to bronze as the matter to bronze, and bronze to the matter of statue. What underlines the ordering of the terms of the series is the former being determined in the manner of a substance by the latter, so the bronze counts as matter for the statue and so is a statue in capacity, if it is determined by statue as the substance it is, with the linguistic marker that the term for the matter occurs in the adjectival form ‘brazen-en’ qualifying the term for the substance. Given this ordering we say, then, that bronze is a statue in capacity, but earth is not, because bronze is determined by statue as the substance it is, while earth is not.

Now this distinction between what counts as matter synchronically clearly matches the earlier discussion of what counts as matter, and so being in capacity, diachronically. Just as we would say that the earth is not in capacity a statue—it is too far removed—but were happy to say that the bronze is potentially a statue, so we do not now want to say that the statue is earthen, but rather that it is brazen. The serial relationship recasts, then, our insights about when to talk of matter as being potentially X, in a way that applies both to the diachronic case and the synchronic case.⁴⁷

A further point which the series seems designed to capture is the teleological relationship between matter and substance: what is later in the series *fulfils* the capacity of the earlier. In the diachronic cases, it was clear that what was said to be in capacity a human being or a statue was said so because it was capable at a later time of being such in activity. When Aristotle talks of the box being later than the wood this seems similarly to capture the way the box fulfils the potential of the wood to be a box, but without this diachronic aspect.⁴⁸ In this way, the earlier–later relationship in the series is a teleological relationship, which may or may not also be a diachronic relationship. In

⁴⁴ Cf. *Metaph. H.6*.

⁴⁵ Cf. *On Generation and Corruption I.7*.

⁴⁶ Putting aside outliers in the tradition of Plato’s receptacle, such as prime matter and passive *nous*.

⁴⁷ This is one of the points on which my interpretation differs from that of Charles (2010) 192–3, who explains the potentiality of synchronic matter primarily in terms of its retaining properties that made it suitable for becoming the substance.

⁴⁸ 1049a21–23: ἀεὶ ἐκείνο δυνάμει ἀπλῶς τὸ ὑστερόν ἐστιν. οἷον τὸ κιβώτιον οὐ γήινον οὐδὲ γῆ ἀλλὰ ξύλινον· τοῦτο γὰρ δυνάμει κιβώτιον καὶ ὕλη κιβωτίου αὐτῆς...

the next chapter, *Θ.8*, Aristotle is explicit that the relationship between matter and substance is both definitional and teleological. The teleological relationship may also be a temporal one of coming into being for the sake of the end, and in this case what is later in the process of becoming is prior in being and account as the end of the process. Similarly, in the case of the series it seems that we can say that what is prior in the series is for the sake of what is later: the wood understood as a capacity to be a box is for the sake of the box. The box is then prior to the wood as the end of the wood, and it is this priority relationship that also obtains when we consider the wood as the concurrent matter of the box. The substance, then, specifically the substance as form, determines what the matter is as the end which fulfils what the matter is in capacity. We may add now to the earlier answer that that matter is in capacity substance in the sense that it is indeterminate but determinable by substantial form as *an end*.⁴⁹

Does this understanding of matter demarcate those cases where we want to say that the matter is the substance in capacity from those where we do not? In the diachronic cases, it may at first seem too inclusive: would we not say after all that a seed also prior to conception is determined by the human form? It is after all uniquely a *human* seed. Aristotle acknowledges in *DA* II.1 that one might say that the human seed is a *human body* in capacity, but this is not the same as being a *human being* in capacity. The seed needs to be further changed before it is a human being in capacity. Or as one might say, a seed is potentially a potential human being by being a potential human body. We would not say that it is yet a human being in capacity since it does not yet have an inner principle of change, and is therefore not yet such that *it* can come to be a human being. Similarly, in the case of a house, one might say that the mud before it is baked into bricks is potentially a potential house, and only when it has been made into actual bricks a house in capacity. In these cases, the matter is too indeterminate to be determinable by the form in question: rather it needs to be more fully determined by another form (brick, embryo) before it is determinable by this form (house, human). What we need to be clear about then is that the matter qualifies as being the substance in capacity insofar as it is directly determinable by the form of this substance, say, man or house, rather than indirectly through being determinable by some other form, determination by which will in turn make it determinable by this form. 'Being in capacity' is not a transitive relationship. When we say that the human seed is uniquely human what this means is not that it is already in capacity a human being but that it has a capacity to be something which can become a human being, and that this, not the capacity to be a human being, is the capacity which determines it. This is true whether or not a human seed is uniquely human in the sense of being suited only to becoming a human being.

⁴⁹ While my interpretation shares with that of Charles (2010) the emphasis on the teleological conception of matter, it differs in relating this to the indeterminacy of matter, of whose relevance Charles is critical, cf. p.183.

We have now reached the point where *Metaph. Θ* ties up directly with our analysis of the *DA*. The basis for saying that the body is alive potentially is that it belongs as matter to a compound whose form determines what it is. The matter is not a human being in its own right, but only insofar as it is determined by a form, the soul, as the matter of a human being. The matter does not, *pace* the materialists, represent a living being in its own right. Already the opening of *DA* II.1 indicated that this indeterminacy was the pertinent feature of matter, the feature which Aristotle wanted us to have in mind when thinking of the body as the matter of a living being: ‘what is not in itself a determinate something’ (412a7–8).⁵⁰ *Θ*.7 links the indeterminacy of matter to its adjectival status and on that basis identifies the matter as being in potentiality. So we have confirmation that for Aristotle the proper basis for saying that the body in capacity has life is its indeterminacy in relation to the form. From this point of view, it is less important whether we think of the matter as coming to have this form or as already having it: it is only insofar as or until the matter is determined by the capacities that define the soul that we say that it is in fulfilment a living being, and that is a determination that matter taken on its own can never provide.

⁵⁰ ὁ καθ' αὐτὸ οὐκ ἔστι τόδε τι.

2

Towards a Scientific Definition of the Soul: *DA* II.2

The most common account was, first of all, a response to the first two questions raised in *DA* I.1: to which of the ten categories does the soul belong? Is it a fulfilment or a capacity? It is clear that answering these two questions cannot be an attempt to define what the soul is, its essence, in any precise way. It is rather a preliminary to defining the soul in the sense that it tells us what kind of definition it is appropriate to demand for the soul. Similarly, if I ask you what colour is and I'm told that it is a quality of bodies, with the potentiality to cause vision, then this account may roughly pick out colours from other attributes, but it is not a proper definition of the essence of colour. I will have a rough idea of what you are talking about, at least enough to inquire further into the nature of colour. So also the common account of the soul gives out an outline, as Aristotle says, of the sort of thing the soul is, to be filled in by an account of its essence. An essential definition of the soul will have to comply with the outline account. As we shall see, Aristotle, once he has given such a definition, will check that it fits the outline account.

It is confirmed right from the start of *DA* II.2 that Aristotle does not think we have defined the soul properly yet:

Since clarity and what is better known in account (*kata logon*) comes about from things that are less clear but more obvious, we should try again to approach the soul in this way. For the defining account should not only show the fact ['the that'], in the way the majority of definitions do, but also contain and present the cause. For as it is the propositions (*logoi*) of the definitions are like conclusions. For example, what is squaring? The construction of an equilateral rectangle equal in area to a given oblong. Such a definition is a proposition proper to a conclusion. But a definition which says that squaring is finding a mean states the cause of the matter. (413a11–20)

Aristotle here recommends a new approach. We shall start with what is more obvious to us about the soul and work towards what is most knowable in account. This will be the definition of the essence of soul. This definition will differ from those generally offered by showing not just what the object is but why it is. Aristotle is drawing on his distinction in *APo* II.10 between three kinds of definition. Scientific inquiry may be seen as proceeding in three stages. Given that we possess a nominal definition of a phenomenon, we can inquire into its existence and then into its essence. This is the

view of scientific inquiry argued for by David Charles,¹ but as far as my argument is concerned nothing hangs on whether we accept a two or a three stage view, since it is assumed that we know that the soul exists. (None of the views of the soul canvassed in Book 1 is eliminativist.) The key point is that we may start a scientific inquiry into the essence of something because we already possess a definition or account which, while it falls short of a full definition of the essence, does indicate a feature that directs us towards the essence. Such a definition may state part of the essence or merely a necessary consequent of the essence, but in either case it will fall short of a full statement of the essence. Such a definition will often be a statement of what the phenomenon is generally taken to be. The example of thunder helps make the point. The nominal definition of thunder is a noise in the clouds, and the definition of its essence is a noise made by fire being extinguished in the clouds. Here 'noise in the clouds' is part of the essence of thunder but it is 'noise from fire being extinguished in the clouds' which states the full essence and the cause of the phenomenon. Because the essence plays the role of cause in relation to the other necessary features of thunder, we can use the definition of the essence to explain the nominal definition.

Aristotle takes the nominal definition to play the role of the conclusion in a demonstrative syllogism, while the essential definition provides the middle term through which the conclusion is demonstrated. Similarly, in the example Aristotle gives in *DA* II.2, the definition of squaring as 'the construction of an equilateral rectangle equal in area to a given oblong' states the meaning of 'squaring' and works as the conclusion of a demonstrative syllogism, for which the essential definition provides the middle term. Methodologically, Aristotle is recommending that we start with a nominal definition of soul and then try to find the essential definition that will explain the nominal definition, just as we might start from the nominal definition of what squaring is and try to identify what explains why this is squaring. The reason why he commends this strategy is, as he says, that this nominal definition is more obvious. Being more obvious it provides us with a vantage point from which we can progress to the definition which is clearer and more intelligible.² This is the definition which states the cause (*to pragmatos legei to aition*).

If this is right, the opening of *DA* II.2 responds to the methodological question raised at the beginning of I.1: the method of inquiry will be the one recommended in Book 2 of the *APo*. We will start with a nominal definition of the soul and then proceed within the framework of the demonstrative syllogism to find a definition which explains the nominal definition. This was also the kind of answer suggested by Aristotle in *DA* I.1 when he said that the consequences could make a great contribution to the discovery of the essence.

But what sort of definition of the soul is 'more obvious' to us? The parallel with the *APo* and the example of squaring make us expect that the starting definition of soul will

¹ Charles (2000).

² For the distinction, cf. *APo* I.2 71b34–72a6.

be a nominal definition of soul, stating the, or a, common meaning of the term.³ It is clear that the definition has to state a property that is necessarily true of soul, and perhaps part of its essence, as noise in the clouds was part of the essence of thunder. Otherwise it will not play the role of a conclusion of a demonstration which proceeds through the essence.⁴ Finally, the property should follow necessarily from the essence of soul, while not itself reveal its complete essence. Otherwise, it would not just occur in the nominal definition. It is such attributes that Aristotle already referred to in the passage from *DA* I.1 as attributes ‘consequent on the nature or substance’.

Robert Bolton has suggested that the nominal definition is the common account of the soul in *DA* II.1,⁵ that is, the definition of the soul as a first fulfilment of an instrumental body potentially having life. I have already suggested what I take the function of the common account to be. But independently of this suggestion, it is clear that the common account does not fit the bill of a nominal definition for the purposes of *DA* II.2. Here again are the key lines:

Since clarity and what is better known in account (*kata logon*) comes about from things that are less clear but more obvious, we should try again to approach the soul in this way. For the defining account should not only show the fact [‘the that’], in the way the majority of definitions do, but also contain and present the cause. For as it is the propositions (*logoi*) of the definitions are like conclusions. For example, what is squaring? The construction of an equilateral rectangle equal in area to a given oblong. Such a definition is a proposition proper to a conclusion. But a definition which says that squaring is finding a mean states the cause of the matter. (413a11–20)

First of all, Bolton takes it that the reference in line 413a16 to the definitions that are like conclusions of an argument is primarily a reference to the definitions offered by Aristotle himself in II.1. We might think that the plural here reflects the fact II.1 in fact offered not one, but three (or, on Bolton’s count, four definitions) of the soul. However, this construal of the plural hardly squares with the claim two lines before that the majority of the definitions state the conclusion. Aristotle seems to be referring not primarily to his own definitions but to those that are currently in circulation, perhaps of the sorts referred to in his survey of other theories of the soul in *DA* I.3–5. Second, the common account seems to be too theoretically informed to play the role of nominal definition: terms such as ‘first fulfilment of an instrumental body’ hardly reflect common usage of the term ‘soul’ (*psuchê*).⁶ We are looking instead for an account of the soul comparable to the account of thunder as noise in the cloud or squaring as finding a square of the same size as a given rectangle, an account, that is, which stays closer to common or garden notions of the term. Third, it may be argued, as does Simplicius, that already the common account in *DA* II.1 had a causal aspect insofar as it refers to the soul as the form and fulfilment of the body, which suggests the

³ I am here broadly in agreement with Bolton (1978).

⁴ For more detail, see Bolton (1978) nn. 21, 22.

⁵ Bolton (1978). ⁶ See also Charles (2000) 168, n. 54.

soul as a formal and final cause. Correspondingly, when Aristotle in II.4 (415b11–12) articulates the ways in which the soul is a cause he says that the soul is a cause in one way as the *ousia* of ensouled bodies. Here he seems to presuppose that the reader would already recognize *ousia* as the formal cause, alongside the efficient cause and the final cause. The causal aspect is problematic if we think that the point of the nominal definition is to state the fact to be explained *rather than* the causal explanation; and Aristotle's example of squaring strongly suggests that this is part of his point. On the other hand, on the reading I suggested of the aim of *DA* II.1 it is not surprising that the common account should have causal implications since it is an outline of any definition of the essence of the soul. Without telling us what the essence is it tells us the kind of role it should play in relation to the body. Finally, the opening of *DA* II.2 asks for new starting point of inquiry also in the sense of a new account that is prior to us, that is, not one already given in the previous chapter.

The definition of the soul Aristotle chooses as his starting point is one that would indeed be obvious to us if we were Greeks of his time. It states a feature that is commonly understood by the term 'soul', indeed a feature that may plausibly be taken to be just what the Greeks at this time generally understood by 'soul'. Continuing from the last quotation, Aristotle says,

So (*oun*), taking up a starting point for the investigation, we say that the ensouled is distinguished from the soulless by living. But living is said in many ways and even if just one of these is present in something, we say that it lives, such as thinking (*nous*), perceiving, change and rest with respect to place and, moreover, change with respect to food and also diminution and growth.

The 'so' (*oun*) suggest that we now proceed according to the previous methodological reflections: we are now doing what Aristotle has just recommended, namely, starting with what is more obvious to us. As often in Aristotle's investigations, what is more obvious to us coincides with 'what we say':⁷ 'We say that the ensouled is distinguished from what has no soul by being alive'. 'Being alive' is, then, the distinguishing mark of what is ensouled. It seems, then, that we should seek an account of the essence of soul which explains why ensouled things are alive.

The idea that what has soul lives fits well with our notion of a nominal definition, since it captures a common, layman, understanding of the meaning of the term 'soul'. So the Greek word for 'soul', *psuchê*, may be often translated as 'life' and 'ensouled' (*empsychon*) as 'living'.⁸ One reason why Socrates' first account of death as the separation of soul from body is so readily accepted by his interlocutors in Plato's *Phaedo* (64c) is that Greeks would think of something's being alive insofar as soul is present. As in Homer,⁹ people die when the soul leaves the body, just as the presence of soul makes them alive.

The claim that what is ensouled is distinguished by being alive is a commonly held one. However, it is not immediately clear that the claim is of the right form to serve as

⁷ Cf. Owen (1986) 242–3. ⁸ Cf. LSJ, *s.v.*

⁹ E.g. *Iliad* IVX. 518. For further evidence and discussion, see Bremmer (1987) Chapter 3.

the conclusion of a demonstrative syllogism. There are two problems. First, the subject of the conclusion is not soul but what has soul or what is ensouled. We might expect the subject of the conclusion of a demonstrative syllogism through the essence of soul to be the soul itself rather than what is ensouled. So, for example, the soul is F, F is alive, therefore the soul is alive, where F would express the essential attribute of soul in virtue of which it is alive. The following is not a valid syllogism: the soul is F, F is alive, therefore ensouled beings are alive. It is not immediately clear how the definition of soul will provide the relevant middle term for a syllogism whose subject is what is ensouled. Contrast the kind of conclusion being offered by Xenocrates in *APo* II.4:

Those people who try to prove through conversion what the soul is (or what a man is, or anything else that exists) postulate what was set at the beginning. E.g. if someone were to claim that soul is what is itself explanatory of its own being alive, and that this is a number that moves itself: it is necessary to postulate that soul is just what is a number which moves itself, in the sense of being the same thing as it. (91a35–b2)

Here the syllogism serves to prove that the soul is what explains itself being alive, while Aristotle's own analysis of the soul requires that it explains the body's being alive. However, in this respect the case of the soul is not significantly different from Aristotle's favoured examples in *APo*. II. Consider, again, the example of thunder: thunder is, according to the nominal definition, noise in the clouds. In this case the phenomenon to be explained is one that occurs in a certain subject. The definition of the essence of thunder similarly states that is the extinguishing of fire *in the clouds*. We might say, therefore, that the essence of soul relates to life in a body rather the way the essence of thunder relates to noise in the clouds. So the explanatory syllogism in the case of thunder would go: noise belongs to fire being extinguished; fire being extinguished belongs to the clouds, therefore noise belongs to the clouds (*APo* 93b8–12). Similarly in the case of the soul: life belongs to X,¹⁰ X belongs to what is ensouled, therefore life belongs to what is ensouled, where 'X' stands for an essential feature of soul. Here the essence of the soul generates a conclusion about what the soul belongs to, not about the soul itself. Similarly, in the example of thunder the conclusion is that noise belongs to the clouds. This is clearly because we take soul essentially to belong to something, just as we take thunder as a phenomenon that essentially belongs to clouds. We do not expect to find detached souls anymore than thunder apart from clouds. So the demonstration through an essential feature of soul or thunder can rightly generate conclusions about what is true of ensouled beings or clouds.

Platonic interlude: there is a parallel for Aristotle's procedure in Plato's *Laus* X (895c). Here the Athenian Stranger is seeking a definition of the essence of soul. He takes as his starting point two observations. The first is that whenever something

¹⁰ This claim can be made without implying that the soul itself is alive irrespective of or prior to a body, just as the claim about noise can be made without implying that there is not something in which the fire is being extinguished when noise is produced. Rather the point of the syllogism is to articulate the way in which soul is responsible for the living of the body in which it is.

moves itself we say that it is alive, and the second that whenever we observe that there is soul in something we must agree that it is alive. The Stranger then proceeds to make a distinction between the thing, its name, and the account of its essence (*ousia*). He offers as the account of the essence of soul: 'the motion that is able to move itself'. The overall argument seems to be that this definition of soul recommends itself because it explains that by virtue of which we say that ensouled beings live: we say that ensouled beings are alive because their soul moves them. In other words, the Athenian Stranger has offered us the tools to construct the following syllogism:

What has soul has self-motion. (895c)

What has self-motion is alive.

Therefore what has soul is alive. (895c)

If we accept this reading of the *Laws* passage, then it offers a clear parallel with Aristotle's procedure in *DA* II.2. The *explanandum* is the same 'what has soul is alive', but the middle term of course differs, for, as *DA* I.3 shows, Aristotle rejects the claim that the soul moves itself. **End of Platonic interlude.**

Now for the second problem. We might say that what people generally think of the soul, and what Aristotle is really referring to when he says that ensouled things are alive, is that soul is what causes living beings to be alive. So the notion of soul is itself causal: soul is that which causes living beings to be alive. So it seems that the desired contrast between the conclusion which states a fact and the essential definition that states the cause is missing from Aristotle's starting point here.

I would reply by conceding some of the objection, namely, that the claim that what is ensouled is distinguished by life is already meant to point to the soul as cause of life, while insisting that this claim can still play the role of the conclusion of an explanatory syllogism, in which the full essence is not displayed. For, we can distinguish between propositions that are causal in the sense that they are about one thing causing another and propositions that are causal in the sense that they successfully display what it is about the one thing that makes it the cause of the other. Compare Aristotle's distinction between experience and knowledge in *Metaph.* I.1. The layman knows that hemlock kills but only the expert knows what it is about hemlock that kills. So it is part of the layman's conception of hemlock *that* it has a certain effect, but he doesn't know *why* it has this effect. Similarly, it would be part of the common conception of soul that it causes life, but it is still left to be explained why soul causes life. Therefore, it does not matter greatly for my argument whether we take Aristotle's starting point at 413a21 to be that ensouled beings are alive or that they are alive because they are ensouled. For the essential feature because of which living beings are alive is still to be identified.

The causal account of the soul, then, will be that which fully explains the fact that ensouled beings are alive. But Aristotle goes on to point out (413a22–5) that this task breaks down into several explanatory tasks because being alive is not a simple thing: there are different ways in which one can be alive and so different ways in which the

soul can cause an ensouled being to be alive. Aristotle thus proceeds (413a25–b2) to explain the soul as the cause of each kind of being alive. First of all using nutrition is a way of being alive, characteristic of plants. This is explained by the capacity and principle (*arkhê*) ‘through which [plants] grow and diminish in opposite directions’ (413a26–8). Since nutrition is the minimal life form that all living beings must participate in, Aristotle also says that ‘living belongs to all living beings because of this principle’ (413b1–2). Next is the life activity of perception, characteristic of animals. The cause of this is the sense-faculties (413b2).

What needs to be shown is the way in which the various kinds of soul are causes and principles of the various kinds of life forms. And this is what the rest of *DA* shows. At this stage, Aristotle is content with summing up the causal role of the soul in relation to the various activities at 413b11: ‘For now, let us just say this much, that the soul is the principle (*arkhê*) of all these activities and is determined by the following capacities: the nutritive capacity, the perceptual capacity, the intellectual capacity and movement.’¹¹ The account of each of these capacities, as the causes of the different life activities, will be the definition of the essence of soul.

Aristotle returns towards the end of *DA* II.2 to the question of the relationship between the common account in *DA* II.1 and the definition of the soul as a cause of various life functions. He reiterates that the soul is that by which we live and so it is the cause in the sense of the form rather than the matter. He then refers back (*kathaper eipomen*, 414a15) to the distinction between three manners of substance, and identifies the form as one of them. He then (414a18–19) aligns the soul as form with the fulfilment of the body. In reverting in this way to the notion of the soul as a fulfilment of the body, the passage has sometimes been taken to show the priority of the *DA* II.1 account over the causal definitions. However, on my reading Aristotle is returning to show the compatibility of the causal definitions with the outline account. Thereby he is using the outline account as what it is supposed to do: as a check that the essential definition of the soul is of the right general kind.

The causal account of the soul is supposed to provide middle terms for demonstrations of the various life activities of living beings.¹² It gives the essence of soul as the

¹¹ νῦν δ' ἐπὶ τοσούτων εἰρήσθω μόνον, ὅτι ἐστὶν ἡ ψυχὴ τῶν εἰρημένων τούτων ἀρχὴ καὶ τούτοις ὥρισται, θρεπτικῶ, αἰσθητικῶ, διανοητικῶ, κινήσει.

¹² While Kent Sprague (1996) is right in seeking to use the notion of the soul as a cause of life to construct a demonstrative syllogism, it is unclear to me why she seeks to find the preferred definition in the *conclusion* rather than in the premises. The root of the problems she has in reconstructing the demonstrative syllogisms for the soul may be the claim that because of the example of squaring ‘we have to assume that “an actuality or formulable essence of something that possesses a potentiality of being besouled” (414a27) qualifies as a definition that is not simply the conclusion of a syllogism but that somehow exhibits the ground’ (105). But it is quite clear that the explanatory middle term in the example of squaring should be ‘finding the mean proportional’ and that it is this term that will correspond to the essence of soul. On the reading I am suggesting ‘an actuality or formulable essence of something that possesses a potentiality of being besouled’ is not Aristotle’s preferred definition of the essence of soul, nor is it supposed to figure in the demonstrative syllogism, rather it works, in accordance with the outline account of the soul in *DA* II.1, as a description of the causal role that the essential definitions will play.

starting point for explaining the other attributes that are necessarily true of living beings insofar as they are alive. Now if this is true we expect the causal account of the soul also to show the soul as the cause in some of the ways that are available in scientific demonstration. Aristotle explains in *APo* II.11 that each of the four causes, formal, final, efficient, and material cause, can play the role of an explanatory middle term in a demonstrative syllogism. His examples of each are the following:

1) Material cause:

The angle in a semicircle is half of two right angles.

The half of two right angles is a right angle.

The angle in a semicircle is a right angle.

Here the middle term ‘half of two right angles’ expresses what a right angle is composed of, that is, its matter. So the deduction happens through the material cause as the explanatory middle term.

2) Efficient cause:

The Athenians were the aggressors.

Aggressors are made war on.

Therefore the Athenians were made war on.¹³

Here being the aggressor is the efficient cause and works as middle term explaining why the Athenians were attacked in the Persian War.

3) Final cause:

Shelters for belongings are roofed.

Houses are shelters for belongings.

Therefore, houses are roofed.¹⁴

Note also here that the final cause of a house, sheltering belongings, seems to be the same as its formal cause: if you were to define what a house is you would say ‘a shelter for yourself and your belongings’. The sameness of final and formal cause is a non-accidental feature of natural causation, which we shall find reproduced in the case of the soul in Chapter 5.

Aristotle offers no example in II.11 of the formal cause as the explanatory middle term, but there have been plenty in the preceding discussion. To take the familiar example we had before:

¹³ I have changed Aristotle’s language slightly for ease of presentation.

¹⁴ I avoid the problematic example of digestion, in favour of the simpler example Aristotle offers, as developed by Barnes (1993) 231. Leunissen (2007) 167 seeks to avoid the problem by arguing that Aristotle does use final causes as explanatory middle terms but only as predicates in the conclusion. There is on this account then no demonstration *through* the final cause, but only *of* the final cause. This seems to throw the baby out with the bathwater: the interpretation not only undermines the primacy of final causation in nature as an explanatory principle, it also makes it very hard to see how the formal cause works as an explanatory middle term in those cases, such as a house, where it is the same as the final cause. Leunissen (2007) 170–1 writes of the subsumption of the final cause under the formal cause, but it is more characteristic of natural contexts, as we shall see, to say that the formal cause is explicated in terms of the final cause.

Thunder is the extinguishing of fire.
 Extinguishing of fire occurs in the cloud.
 Thunder occurs in the cloud.

Here ‘extinguishing of fire’ offers the ‘what it is’, the formal cause of thunder, and occurs in the explanatory role as middle term in the demonstration.

Now Aristotle said in *Phys.* II that nature was an explanatory principle of nature and worked as a cause in those four familiar ways. Since knowledge of nature is meant to be an instance of demonstrative knowledge, we would expect nature in those various senses to work as an explanatory middle term in demonstrations. And Aristotle confirms the expectation in *APo* II.11. Having offered the three kinds of causes as middle terms, he says (94b27–37) that in many cases the same phenomenon can be explained with reference to several causes, like the final and efficient cause. So thunder can be explained both because it is necessary for it to sizzle and make a noise when fire is extinguished (efficient cause) and because, according to Pythagoreans, it frightens the denizens of Tartarus (final cause). We know of course already what the formal causal explanation of thunder is, the extinction of fire in the clouds. Aristotle underlines (94b35–6) that it is especially in the case of natural processes and products that we get such explanatory diversity. The reason is obviously that nature itself works as a cause in these various ways.

Now my argument so far has been that Aristotle seeks to define the soul as the cause of the various life phenomena, and that his way of seeking such a definition is by trying to identify the account of the soul that will serve as an explanatory middle term in demonstrations of the necessary attributes of living beings *qua* living. Since, as Aristotle told us at the beginning of *DA* I.1, the soul is also a principle of animals, and I have suggested, it constitutes the nature of living beings, we would expect that soul too could possibly be understood as the cause in more than one way. We can exclude already from the common account of soul, in *DA* II.1, that the soul works as such as the material cause since soul is said to be form rather than matter. However, as the discussion of the nutritive soul in *DA* II.4 will confirm,¹⁵ the soul works as a cause in the three other ways, as formal, final, and efficient cause. We can exemplify these roles by some examples taken from the soul’s role in nutrition and generation. Many more could be found according to which aspect of nutritive behaviour we are interested in, and in which kind of living being we are considering.

Final cause:
 People are immortality-lovers.
 Immortality-lovers have intercourse.
 Therefore people have intercourse.

¹⁵ See Chapter 6.

Understand here immortality-lovers as meaning lovers of the perpetuation of the eternal species form, which is the soul. Soul in this way works as final cause, like an object of desire.

Efficient cause:

What is heated up internally is concocted.

Ingested food is heated up internally.

Therefore ingested food is concocted.

Here, as Aristotle explains in *DA* II.4, it is the soul that regulates the internal heat, as its contributory cause, in concocting the food. The reference to soul is necessary in fully specifying the efficient cause since it is the soul that ensures the proper proportion of the heating, not too much, not too little.

Formal cause:

Large animals produce only one offspring at a time.

The elephant is a large animal.

Therefore the elephant only produces one offspring at a time.

The example is taken from *GA* IV.4 771a17–22 but serves our purpose since it relates the reproductive behaviour of the elephant directly to its size, a formal feature. Size is part of the nature of the elephant which is explained by the form of elephant, either directly as a part of the definition of elephant or as a further necessary consequence of its essential attributes. It is the form of elephant that ensures that it is big, and so it is the form of the elephant which explains why it only has a single calf at a time.¹⁶ Since the form of the elephant is its soul, we can say that the example shows how the soul works as a formal cause in explaining the reproductive behaviour of animals.

Now there is a debate about the ways in which, if any, Aristotle meant for his model of demonstrative understanding to be applied to the biological works. Views vary accordingly about the relationship between Aristotle's theory of science and his scientific practice, particularly, but not exclusively, in the biological works. There are in the biological works, as Jonathan Barnes has underlined, no overtly stated demonstrative syllogisms. However, this observation leaves a range of interpretations open, including the option that Aristotle meant for the demonstrative model to be applicable to his biological accounts, and that such applicability would show the correctness of those accounts. Robert Bolton, Allan Gotthelf, and James Lennox, amongst others, building on the seminal work of David Balme, have stressed the extent to which Aristotle's biological accounts are amenable to the demonstrative model. Others, notably Geoffrey Lloyd, have criticized this interpretation. Through a survey of Aristotle's uses of

¹⁶ Aristotle explains further that 'their size is the very reason why they do not produce many offspring, because in animals of this sort the nourishment gets used up to supply the growth of the body, whereas in the case of smaller animals, nature takes away from their size and adds the surplus on to the seminal residue' (771a28–31, transl. Peck in Loeb). The fact that the amount of matter available for semen is determined by the available nourishment *given the size of the animal* again confirms the formal character of the explanation.

the term *apodeixis*, ‘demonstration’, Lloyd highlights the way in which *apodeixis* is often used for arguments that have a less strict status than required of a demonstrative syllogism in the earlier chapters of *APo*, I.1–4. This may in itself come as no surprise, in that many similar words used by Aristotle sometimes have a stricter and sometimes a looser sense: *syllogismos*, *ousia*, or *logos*, to take a few. Nor need the variety of uses of *apodeixis* pose a difficulty to the opposing camp, in that their claim is not that *apodeixis* always carries with it the notion of the demonstrative model, but rather that Aristotle’s explanatory practice and his presentation of it in the biological works are consistent with the notion of *apodeixis* articulated by the demonstrative model. Nonetheless, Lloyd’s point is an important reminder that we cannot assume that *apodeixis* in the biological works always refers to demonstration strictly understood.

Even more important, perhaps, are his claims that the other uses of *apodeixis* point to Aristotle himself having changed his standards of scientific argument in the biological works. He cites five passages, of which Lloyd considers the following lines from *PA* I ‘the most enlightening’:

But the manner of the demonstration and the necessity is other in the case of physics and the theoretical sciences. This has been discussed elsewhere. But the *arché* in some cases is what is, in others what will be. For since health or man is such, necessarily [so-and-so] is or comes to be: it is not that because this [so-and-so] is or comes to be, necessarily it [the product] is or will be. Nor is it possible to join the necessity of such a demonstration (*tês toiautês apodeixeôs*) to the eternal, so as to say, since this is, that is. I have discussed these matters in another place . . . (*PA* 639b30–640a8, transl. from Lloyd (1996))

The passage is, as Lloyd says, ‘difficult and controversial’, particularly in the construal of the first sentence, which at first glance looks like it is contrasting physics and the theoretical sciences, while Aristotle says elsewhere that physics is a theoretical science (*Metaph.* VI.1 1025b24–7). Lloyd argues that however we try to solve this difficulty, the passage lays out two modes of *apodeixis*. One is ‘a mode of *apodeixis* where you start from what will be, the *telos*—health or man—and work back to what had to be, or become, to produce that *telos*’. Here the necessity is hypothetical: the antecedent can be demonstrated to be necessary on the assumption that the outcome ‘health’ or ‘man’ is to come about. The other mode of demonstration operates with eternal and unconditional necessities: here the antecedent can be asserted independently of the consequent. Lloyd suggests that the former mode of demonstration does not comply with the strict standards of the *APo* which require that the premises be necessary independently of the consequences. *PA* I.1 signals, then, that the teleological explanations to be employed in biology are not strictly demonstrative in the way envisaged by *APo*.

Lennox has replied effectively to Lloyd’s interpretation of the passage. He points to the way in which the *Phys.* II.9 insists that goals are first principles in natural science, a point reworked in *APo* I.24 85b28–86a3 in the context of an argument to the effect that since in final causal explanation we know something best when we no longer know it because of something else, this is also true in other kinds of demonstration.

And the implication of this argument that there is demonstration using final causes as principles is made explicit, as Lennox points out, in *APo* II.11, the chapter we were looking at just now. So if one were to agree with Lloyd that there is a difference between the two kinds of *apodeixis* referred to in *PA* I.1 from the point of view of living up to the standards of *APo* I.1–4, then one would have to say, equally, that there is a tension between these standards and *APo* II.11.

Moreover, it is not clear why the use of final causes as explanatory middle terms in nature should undermine the claim that the premises necessitate the conclusion. One might think hypothetical necessitation would fail to necessitate the conclusion for at least three reasons, taken individually or in combination: (1) because other means could be found to bring about the end, or (2) because the end does not always obtain, or (3) because the end does not yet obtain when the means happens. However, none of these is decisive in the case of natural teleology. (1) Nature generally uses the same means for the same ends: our teeth, to use the example of *Phys.* II.9, are generally organized in the same way to facilitate our eating. While it may then be true in practical contexts that humans sometimes find different ways of achieving the same result, so that one end does not necessitate one particular kind of means, this does not seem to hold of natural causation. (2), that the end does not always obtain, seems true only for individuals but is denied by the eternity of the species: insofar as the ends we are considering are the essences and necessary features of the species it is not true to say that these ends do not always obtain. The contrast of course still obtains with beings, the stars or the planets, which are *individually* eternal. As for (3), Aristotle argues in *Metaph.* Θ.8 1049b that while the individual means precedes the individual end, for example the acorn comes before the oak, at the level of the *kind*, there is always a preceding member of the kind, so before this acorn there was an oak that made it, or as Aristotle is want to say, ‘man generates man’. In nature things come into being to perpetuate ends that are already realized. At the level of natural kinds, it is misleading then to say the end cannot necessitate the coming into being of the means since the end has not yet to come into being. If we take these points into account, there seems no compelling reason why the hypothetical necessitation of the means by natural ends, taken at the level of the species,¹⁷ should not be strong enough to support demonstrative argument.

These considerations might serve as a first defence of the claim in *APo* II.11 that final causes can play the role of an explanatory middle term in demonstrative arguments. However, it is not my intention here to argue that Aristotle has a consistent theory of demonstration through the four causes in the *APo* or that he implements such a theory consistently in the biological works. Such arguments are major interpretative tasks in their own right. But insofar as the tensions that Lloyd has found between the *APo* and the biological works would already have to be seen as located or addressed within the *APo*, they do not constitute reasons for thinking that Aristotle changed his mind about

¹⁷ Since demonstration expresses knowledge, and there is no knowledge of the individual as such, it should not surprise us that the demonstration has to be pitched in this way at the level of the species.

the applicability of the demonstrative model between these works.¹⁸ And nor therefore do they provide grounds for doubting that Aristotle might have wished to apply the *APo*'s ideas about the role of the four causes in demonstration to the psychology of the *DA*, given the foundational role of the *DA* in relation to the biological works.

This is the point I ultimately want to maintain: in the *DA* Aristotle uses the demonstrative model of the *APo* as a framework for identifying the essential features of the soul, as those features that could work as middle terms in syllogisms demonstrating the necessary life behaviours of living beings. This project is foundational for the biological works in that the essential features, so identified, could form the ultimate premises for any demonstrations of why animals have the parts they do. The *DA* can thus be seen as the fundamental stage in Aristotle's zoology, a point argued for by Lloyd elsewhere with supreme persuasiveness.¹⁹

I have been concerned to stress that Aristotle's attempt to define the soul should be seen within the context of his attempt to gain a certain kind of knowledge of the soul, namely the knowledge that is expressed in demonstrative arguments. The definition of the soul will thus provide the explanatory principle for demonstrations of the characteristic attributions of soul, and, by extension, of whatever attributes living beings have *qua* ensouled. I have suggested that Aristotle approaches the identification of the definition of soul from the fact of its connection with life. We are firmly within the explanatory framework of the *APo*. In at least two ways, this framework continues to determine Aristotle's account of the soul in the early chapters of Book II of the *DA*: in the account of the manner and the ways in which the soul works as a cause for living beings and in his concern with the question of whether and if so how the soul, despite being said in many ways, may present a unitary object of definition. These are the issues we shall be looking at in the next two chapters.

¹⁸ There is a tendency in Lloyd's comments to harden the criteria for demonstration in the *APo* so that tensions arise even within that work. So, for example, he uses mathematical demonstrations in the *APo*, which enjoy the strictest form of demonstrative necessity, as a starting for comparisons with Aristotle's arguments in the biological works; see Lloyd (1990) 32–3. But this makes it harder to see how all the four causes could as recommended by *APo* II.11 work as explanatory middle terms, given that there are no final or efficient causes in mathematical reasoning. Since these causes necessitate their outcomes in different ways (as we have seen), we cannot expect mathematical style necessitation to apply in these explanations. But it is the case that the *APo* positively recommends that all four causes can work as explanatory principles. So if the use of these explanatory principles is in tension with the mathematical model it is a tension already within the *APo*, not between the *APo* as such and the biological works.

¹⁹ In Lloyd (1992).

3

Parts and Unity in the Definition of the Soul

In the opening chapter of the *DA* Aristotle explains that he aims to define the soul in such a way that we gain knowledge of what it is, its essence.¹ Knowing the essence of soul is helpful because it allows you to know other things about the soul and beings insofar as they have soul. Specifically, as I argued in the last chapter, the definition of what the soul is can serve as a principle of demonstration for the other attributes of the soul, or ensouled beings *qua* ensouled.² But if the definition of the soul is to serve as a principle of demonstration, at least in accordance with the notion of demonstration presented in the *APo*, then it has to comply with the conditions for definitions laid down in that work. One of these is that the definition should be of something that is, in a strong sense, *one*, which means at least one not by accident or by juxtaposition.³ If the definition of the soul is going to serve as the basis of demonstrative knowledge we need, then, to understand the way in which the soul meets this requirement.

However, already in *DA* I.1 Aristotle suggests the potential difficulties involved in giving a unitary definition of soul:

It is necessary also to inquire whether the soul is with or without parts, and whether every soul is uniform or not. If it is not uniform, [we should inquire] whether it differs in species or in genus. For as it is, those who speak and inquire about the soul seem to consider only the human soul. However, we need to pay attention to whether there is one account of the soul, just as there is of animal, or whether there is a different account for each species, such as of horse, dog, man, and god, where the animal taken generally is either nothing or something posterior, in the same way as another common [predicate] might be predicated. Furthermore, if there are not many souls, but parts of soul, is it necessary to inquire into the whole soul first or into the parts? But it is difficult also to define these, which are by nature different from each other. (*DA* 402b1–11)

Aristotle asks two questions together. The first question here is whether the soul has parts or not. The second is ‘whether “every soul” (*pas psukhê*) is uniform or not’. The two questions are distinct but related. The first question concerns whether it is true of the soul that it is such as to have different parts. This question concerns the internal

¹ *DA* I.1 402a7–16.

² *DA* I.1 402a16–403a2, *DA* II.2 413a11–25.

³ Cf. *APo* 92a31–4, 93b35–7.

organization of every soul. The second question asks whether every soul is of the same kind as every other soul, that is, whether my soul, that of a cat, and that of a plant, all are of the same sort. The second question is, then, about the *external* relation of every soul to every other soul.

It is not difficult to see Aristotle's reason for raising the two questions together in the context of worrying about the unity of soul. If there are parts of soul that differ in kind, then we may ask what it is that these parts have in common such that they are all parts of *soul*. Similarly, if there are different kinds of soul for different kinds of living being, then we will want to know what, if anything, it is that entitles us to say that they all have *soul*. It may of course be that the different parts of soul or the different kinds of soul do not share one or several characteristics by virtue of which we call them parts of *soul* or *souls*. However, in that case it may also be that we shall have to abandon the project of defining soul as such, since, as we have seen, we require that a definition should be of something unitary.

Now Aristotle presents his question about the unity of the definition of soul in terms of the relationship between the kinds of soul. In particular, the question is whether there is one definition of soul as of a genus. He uses the analogy with the definition of the genus 'animal', which includes the species 'horse', 'dog', 'man', and so on. He presents us with two options. The first is that there is a common definition of soul as there is a common definition of 'animal'; that is to say, all the species of soul have a common generic attribute by virtue of which they all count as souls. In that case, we could define the common property of soul and introduce the differences between the various kinds of soul which define them as this or that kind of soul. The alternative, however, is that there is no common definition of soul as a genus, but only definitions of the various kinds of soul. In that case, Aristotle says, 'the animal taken generally is either nothing or something posterior, in the same way as another common [predicate] might be predicated'. I take 'another common predicate' to refer to a common predicate which would apply to the various kinds but not in the way a genus enters into the definition of the species.

One could answer the question about the external relationships of souls without prejudice to the question about parts of soul. So it could be that a canine soul, a human soul, and so on, were all essentially different, with no common elements, and it could be that each of these souls internally was characterized either by having parts or by having no parts. However, I shall argue that this is not Aristotle's view. As we shall see, he argues in Book II that the capacities that make up the various souls—plant soul, animal soul, human soul, and so on—are also the capacities by which the various souls differ from each other. So, for example, the perceptual capacity will be both part of animal soul and the capacity by which animal soul differs from that of a plant. On this view, there is a close relationship between the thought that there are different souls for different kinds of living being, and the view that their souls as a whole are composed of parts: because there are parts of soul the souls of living beings can differ by some having one part or more which others do not have. It is because Aristotle in *DA* I.1 anticipates

this kind of thought that he raises the question of the parts of the soul in tandem with the question of the unity of the different kinds of soul. For the parts of soul that together form the various kinds of soul also give us the elements whereby those various kinds of soul differ. And because there are such parts there is a question about whether and, if so how, they may be unified in one soul, understood either within the soul of one kind of living being (the internal question) or across the souls of different kinds of living being (the external question).

Book I is aporetic: we have to wait till Book II for a more definitive discussion of the parts of soul. Yet it is important to see how Aristotle's fundamental questions about the soul in Book I, Ch. 1 already imply a constructive interest in the notion of psychic parts: Aristotle addresses the question of the unity of the soul in the face of the differences between various kinds of soul by invoking the notion of different parts. The thought seems to be that by defining the parts of the soul we may come to understand both how the soul is constituted internally and how the different kinds of soul differ.

Yet some scholars have thought that Aristotle is entirely hostile to talk of psychic parts. This impression derives especially from *DA* I.5, 411a26–b14, where Aristotle criticizes those—Platonists in all likelihood—who 'hold that the soul is divisible, and that we reason with one part and desire with another'.⁴ The problem that arises for the Platonist is how to account for the unity of the soul. If the soul has parts what makes it one soul? This is a particularly pressing question if the soul itself is supposed to be what unifies the body: if the soul is not itself naturally one, how can it bring unity to the body?

Some commentators have rashly taken the objection to parts of the soul as conclusive.⁵ Certainly, *DA* I.5 shows that if we ascribe parts to the soul, we must do so in a way that also allows for the parts to form a unity and, also, for the soul to unify the body, given that the body cannot be what makes the soul one. However, I.5 does not show that no such account is available. It does not show that one cannot allow for the soul to have parts as well as unity. Rather it presses on us a problem to be solved about how the soul can remain one while having parts. As we shall see, Aristotle not only thinks that there is way in which it is admissible to divide the soul into parts, he also thinks that the notion of parts, properly understood, has a positive role to play in defining the soul as one.

The suggestion I want to make about this positive role lies in immediate extension of my comments about *DA*'s opening chapter. The project of the *DA* is to define the soul. Aristotle approaches this task by analysing the soul into its component elements, its *parts*. Like the letters of the alphabet, the elements of the soul are able to combine in different ways in the souls of different living beings. If they differ the souls of those living beings will differ too. As 'at' is a different word from 'a' by the addition of a different letter, so nutrition and perception together constitute a different kind of soul from just nutrition by the addition of another element. In this way the elements lend

⁴ Cf. *Republic* IV 439d4–8.

⁵ I thus reverse the judgement of Hicks (1907) *ad* 411a30.

themselves both to an account of how a particular kind of soul is constituted and to an account of how this kind of soul differs from another kind. However, Aristotle takes the element that strictly speaking defines a kind of soul as *that* kind of being to be the element that differentiates it from other kinds. So while an animal soul has both nutrition and perception he takes it to be perception that most properly defines an animal soul since it is having this element that differentiates it from those living beings that just have nutrition, that is, plants.

So, the general picture of parts of soul is as the elements that go into defining the various kinds of souls, where what primarily defines the kinds of soul of the various kinds of living being may be thought of as the differentiae of those kinds of living being. Now let me try first to show how this picture emerges from the discussion in *DA* II.1–2, and then fill in some more detail. In II.1, Aristotle picks up the definitional questions from I.1, now intending to answer them. First, in II.1 he gives a ‘common’ account of the soul: the soul falls in the category of substance as the form. More fully, it is the first fulfilment (*entelekheia*) of a natural instrumental body potentially having life (412a27–8). However, this account is still only given only as an outline (*tupôî*, 413a9). As Aristotle explains at the beginning of II.2, the common account does not capture the soul in its essence because it does not show the soul as a cause of what it is in its nature to cause, that is, life. To give an essential definition of soul we need then to define the soul as the cause of life. However, life is said in many ways—nutrition, perceiving, moving around, understanding—so soul too is a cause in correspondingly different ways.

Saying that life, and soul, is said in many ways does not rule out that there might be one way which is central to understanding other ways of being a soul. As shown by Christopher Shields, it is possible that the other kinds of soul may be related to a central case of soul by what he calls ‘core homonymy’.⁶ Roughly, the idea is that other cases of being *F* have to be accounted for in terms of one case of being *F*, but not vice versa.⁷ Core homonymy contrasts with homonymies that do not share a central case, such as ‘seal’ meaning a water-dwelling mammal with flippers, or an imprint-producing device. Thinking of ‘soul’ as core homonymous is initially attractive since, though we do not call the different kinds of soul ‘soul’ in the same way, we do not think it an accident either that the different kinds of soul are all called so. The difficulty lies in finding what the core case of soul might be for Aristotle, if he believed in one. ‘Cause of life’ has been suggested,⁸ but this is simply to re-describe the problem, since, as we saw, ‘life’ is said in as many ways as ‘soul’ (413a22). Another term that has been

⁶ Shields (2002) 179–88.

⁷ More precisely, Shields (2002) 104 defines ‘core homonymy’ as follows: ‘*a* and *b* are homonymously *F* in a core-dependent way iff: (i) *a* is *F*; (ii) *b* is *F*; and either (iii a) the account of *F* in “*b* is *F*” necessarily makes reference to the account of *F* in “*a* is *F*” in an asymmetrical way, or (iii b) there is some *c* such that the accounts of *F*-ness in “*a* is *F*” and “*b* is *F*” necessarily make reference to the account of *F*-ness in “*c* is *F*” in an asymmetrical way.’

⁸ As suggested in Pellegrin (1986) 128.

suggested is ‘means of self-preservation’ (cf. *DA* II.4 415a26–b7),⁹ but again there are as many ways of preserving oneself as there are of living.¹⁰ Next, how about the notion of soul according to the common account in *DA* II.1? But this is an ‘outline’ which does not state the essence of soul, and so does not support the claim that the kinds of soul are *definitionally* connected in relation to a single core case.

More plausibly, Shields argues that the different kinds of life are in different ways intentional systems, which are related by ‘core-dependent homonymy’ to god as the central case. One problem with this idea, however, as Shields himself points out, is to find a notion of intentional system which is broad enough to include nutrition, but not so broad as to include inanimate systems such as heat-seeking cruise missiles, to use Shields’ example. He suggests that the distinction between native systems—whose ends are derived from within—and non-native systems, may demarcate the living systems from the artificial ones. However, this still leaves us with the tricky case of non-living natural bodies, like the four elements. Another issue arising if one were to extend Shields’ idea about life to the soul is that the soul is the fulfilment of a natural body, having life in capacity (412a27–8), and ‘the substance of ensouled bodies’ (415b11–12), relations that god cannot illustrate. In the absence of any clearly satisfactory core notion of soul, I shall put aside this suggestion.¹¹

Whatever we make of the possibility of core homonymy in the case of the soul, it is clear that we cannot give a single *general* definition of soul as the cause of life because there is no general notion of life; rather we must give different definitions of soul as the cause of the various kinds of life. Recalling the question of I.1 whether, if there is no genus of soul, what is said commonly is nothing or something posterior, we may say that there is a common predicate for soul, namely the common account, but this is posterior to the specific accounts of soul, insofar as it does not capture the essence of any soul.

Notice that already at this stage (413a25–b10), Aristotle differentiates the different kinds of life in relation to the different kinds of living being. Nutrition is what makes plants different from non-living things (a25–31), while ‘an animal exists primarily because of perception’ (413b2). This is no surprise, since after all we predicate life of living beings and so we would expect different kinds of life to be exhibited by different kinds of living being. We need, then, to think of the soul not only as the cause of different kinds of life but also as the cause of the different kinds of life of the different kinds of living being, or put more simply, perhaps, we need to think of the soul as the

⁹ So Matthews (1992) 191, suggests defining a power of the soul as follows: ‘*x* is a psychic power for species *s* = df for *s* to be preserved individual organisms that belong to *s* must, in general, exercise *x*.’ He then defines life in terms of such powers: ‘*x* is alive = df there is a species *s*, and a psychic power *p*, such that *x* belongs to *s*, *p* is a psychic power for species *s*, and *x* can exercise *p*.’ One problem here is that there are many powers, passive and active, belonging to species and necessary for their survival which are not psychic, such as the power of the body to withstand the impact of external pressure.

¹⁰ On this point, see Chapter 6 below.

¹¹ Shields (2002) 188–92.

cause of the way in which the different kinds of living being live their different lives. Moreover, if, as Aristotle later says (II.4 415b14), ‘living is the being for living beings and the soul is the cause and principle of this’, we can see why by identifying the soul as the cause of the different kinds of living, we would also thereby be contributing to the definition of these living beings as the different kinds that they are.

The conception of the soul as a principle of life further helps clarify the definitional object in the *DA*. Aristotle, as we saw, wants to define what soul is, its essence. But given that there is no single basic kind of soul, he seeks to define instead the most basic kinds of soul there are. The basic kinds of soul were in turn the souls of different kinds of living being. While what Aristotle seeks to define is ‘soul’, ‘soul’, then, turns out to be indexed to different kinds of living being.¹² This makes good sense since the soul is the principle of life of a certain kind of living being, so a difference in the soul amounts to a difference in the kind of living being that has that soul, insofar as it is alive. Moreover, it makes good sense to say that we cannot talk about different kinds of soul without making reference to the different kinds of living being that have those souls. The soul is after all, the principle of *their* living, not of living in general.

It is towards the end of the passage (413a25–b10) describing how different capacities work as principle of life for different living beings—nutrition for plants, perception animals, and so on—that Aristotle first in the constructive context of Book II uses the term ‘part’ (*morion*): ‘we call nutritive such a part of soul in which even (*kai*) plants partake, while animals clearly have the sense of touch’.¹³ This seems to support the claim that we call capacities of soul ‘parts’ in the context of their characterizing the souls of certain kinds of living being. Later in II.2 at 413b20 Aristotle refers to the perceptual and locomotive parts as ‘differences of soul’ (*diaphoras tês psuchês*), and at 414b35–a1 Aristotle says of perception and, in particular touch, ‘for this makes the difference of animals’. Talk of parts of the soul is then embedded in the context of thinking of the capacities that characterize the souls of different kinds of living being.

It is this notion of a part of soul as a capacity by which the different kinds of soul are characterized which is developed in the following passage where Aristotle discusses the relationship between the parts:

Now let this much have been said, that the soul is the principle of the things mentioned and has been defined (*hōristai*) by these, the capacities of nutrition, perception, the reasoning, and by locomotion. Whether each of these [sc. the nutritive, the perceptual, the cogitative and movement] is a soul or a part of the soul, and if it is a part whether it is so as to be separable only in account or also in place, about some of the cases it is not difficult to gain insight, but other cases are puzzling. (*DA* II.2 413b11–16)

¹² Which is not to say that the souls themselves are different because they belong to different kinds of living being, only that the fact that they are different is shown by the way they characterize different kinds of living being.

¹³ *DA* 413b7–8.

Aristotle makes it explicit that the capacities mentioned are those that define¹⁴ the soul of the living beings.¹⁵ When he goes on to ask the question about whether they each count as a part of soul or a soul, this question is thus premised on the assumption that they define soul. Moreover, Aristotle does not consider the option that these capacities might neither count as parts of soul nor as souls in their own right; rather what we have to consider is: if they are not souls in their own right, in what sense are they parts of soul?¹⁶ The definitional context explains the narrow choice: for if a capacity enters into the definition of soul it enters it either by defining the soul on its own, that is by itself constituting a soul (as does the nutritive soul in plants) or it does so by being a part of the soul which together with other parts defines the whole soul. There are, then, only those two options if we consider the capacities of the soul as they enter the definition of soul, either they are parts of soul or they are souls in their own right.

Separability

In the passage just quoted Aristotle implies that, at least where there are many capacities in the definition of the soul,¹⁷ the capacities have the status of parts and on that basis give us two ways of understanding their relationship to each other: they are either separable in account or separable both in account and in place. He then (413b16–29) gives us reason to reject separability of place (with the possible exception of theoretical intellect). As evidence against spatial separability, Aristotle cites the way in which the bodies of certain insects when divided contain all of the original soul parts: the soul parts cannot then be said to be separable on the basis of their occupying separate places in the living being. The passage looks like a clarification of the objection made in I.5: the case of divided insects was there used as evidence against parts without qualification, while it is here used as an objection to parts understood as spatially separable. Parts understood as separable in account only are left untouched by the objection. This shows that the *aporiai* of Book I.5 did not prepare us for a blanket rejection of *any* notion of parts of soul, but only of a particular conception, the Platonic notion of spatially separable parts.¹⁸

¹⁴ A weaker translation of ‘*hōristai*’ would be ‘has been determined’ but the definitional context (referred back to by the perfect tense) of the previous passages supports the stronger translation.

¹⁵ Taking τῶν εἰρημένων τούτων in ἣ ψυχῇ τῶν εἰρημένων τούτων ἀρχή to refer back to the living beings we have been talking about seems particularly right given that the combination with *arkhé*. For at 413b1 living things are said to be alive because of this *arkhé*, that is the nutritive capacity. The alternative ‘principle of these capacities’ is awkward.

¹⁶ Contrast Corcilius and Gregoric (2010) 87, who take *DA* 413b13–16 as leaving it open whether the four capacities count at least as parts of the soul.

¹⁷ The nutritive capacity cannot very well be said to be ‘a part’ of *plant* soul insofar as it is the sole constituent; however one may still think of it as a definitional part of *soul*, in that it is one of capacities that enter into the definition of the different kinds of soul, and from this perspective it is a part of *soul* which plants have.

¹⁸ Cf. Bastit (1996) 16–17, who plausibly takes Aristotle’s attack on the spatial division of parts of soul to be a reply to *Tim.* 70d7–e3.

Aristotle has given us reason, then, to reject the notion of spatially separable parts. Next (413b29–414a3), he offers positive reasons for the alternative of taking the parts to be ‘separable in account’. What is meant by this phrase is by no means obvious. As far as ‘account’ (*logos*) goes, it seems fairly clear that it is to be taken in the sense of ‘definition’; for Aristotle gives as his example that the ability to perceive and the ability to opine are different in account because what it is to be able to perceive is different from what it is to be able to opine, where the phrase ‘what it is for X to be such and such’ is his standard formula for the object of definition or ‘essence’.¹⁹ It is more difficult to say what ‘separable’ is supposed to mean. As Jennifer Whiting has pointed out,²⁰ there are at least two readings available. On the weaker reading ‘separable’ means just ‘different’; accordingly X and Y would be separable in account if the definition you would give of X differs from the one you would give of Y. On the stronger reading ‘separable’ implies not just ‘different from’ but also ‘independent of’. So X would be separable from Y in account, if and only if the definition of X does not refer to that of Y. It is possible for two accounts to be different yet not to be separable in the stronger sense. So the definition of red is different from the definition of colour, yet it is not separable from the definition of colour since an understanding of what colour is, is presupposed by a definition of red.²¹ In contrast, the definition of man is separable from that of white, say, in that you can define man independently of white, without making any reference to what white is.²²

Now some of Aristotle’s star examples of ‘separable in account’ elsewhere are such that we would expect it to be the case that if X is treated as separable in account from Y, then the account of X will not refer to Y. So in *Phys.* II.2 Aristotle says that the mathematician treats surfaces, lines, and points as separable in account from bodies, even though they are not separable in reality.²³ The implication is clearly that the accounts of mathematical entities will not refer to the bodies from which they are

¹⁹ Cf. *Top.* VII.5, 154a31: ‘a definition is an account indicating the essence of a thing’.

²⁰ Whiting (2002), cf. also Corcilius and Gregoric (2010) 100.

²¹ Two notes of clarification. (1) I take the notion of ‘the definition of X making reference to Y’ to imply that Y is prior in account to X, not necessarily that the definition of X makes overt mention of Y. So the definition of colour makes reference to substance not in the sense that it necessarily expressly mentions substance but in the sense that your definition of colour will rely on terms, say, surfaces or bounded bodies (cf. *Sens.* 439a18–33), which will ultimately have to be understood in terms of substance. Given that the relationship of definitional dependence of X on Y does not require making overt mention of Y, we can also be lax about whether we say the definition of X is separable from the definition of Y or that the definition of X is separable simply from Y. The thought is the former but a mention of Y in the definition of X will also serve to make the definition of X depend on that of Y, since Y in turn will have to be defined. (2) Since the notion of ‘X making reference to Y’ involves Y being *prior* in account to X, as a (direct or indirect) element of the *definiens* of X, we can exclude tricky cases of correlative terms ‘master and slave’ (cf. *Cat.* 6b28–31), where one might think that the definition of either necessarily involves reference to the other (cf., however, also *Metaph.* 1021a27–b3, which warns of the danger of circularity in defining relatives in terms of each other).

²² Cf. Whiting (2002) 144–5. While Whiting’s argument follows a different path from mine in this chapter, I have taken from her seminal article the ideas that the notion of parts in Aristotle involves separateness rather than mere difference in account, and that features of the soul that are definitionally dependent on perception should be ascribed to the perceptual part.

²³ Aristotle reminds us of the mathematical use of separation in *DA* I.1 403b14–15.

abstracted. More generally, there are passages where Aristotle suggests that the form of a composite substance may be separable in account only, the point being that while the form only exists in the context of a composite substance, one may talk about the form in some cases without referring to the composite or the matter.²⁴ In these contexts, at least, Aristotle is operating with the stronger notion of separability in account.

One important difference between separability as mere difference and as independence is that while the first is always symmetrical, the second need not be. So when we say that the definition of red is different from that of colour we are also implying that the definition of colour differs from that of red. But when we say that the definition of man is separate in the stronger sense of independent of that of white, we are not thereby claiming that white can be defined independently of man. Generally, Aristotle holds that the accounts of items in non-substantial categories such as quality depend in some way on the definition of substances such as man.²⁵ So here the substance is separable in account from the quality but not vice versa. We might say, then, that whereas separation understood as difference in account is as such symmetrical, when understood as independence the relationship is as such asymmetrical. We need, then, to consider, if the separability in account of the parts of soul is to be understood in the stronger sense, whether Aristotle in fact thinks of this relationship as symmetrical or not, given that symmetry is not ensured by strong separability as such.

Now a *prima facie* reason for thinking that the separability in account enjoyed by the parts of the soul is both of the stronger and of the symmetrical sort is the parallel with spatial separability. When two parts are spatially separated, like the parts of an insect, clearly the parts are non-overlapping and symmetrically so.²⁶ If we treat 'separable' as a general term to be qualified by either 'in place' or 'in account', we might then think that two kinds of separability will be similar in respect of discreteness and symmetry, but different in that in the one case this discreteness and symmetry will obtain between spatial entities, in the other it will obtain between definitions. At the very least this consideration shows that 'separable' can for Aristotle carry the stronger and symmetrical interpretation.

In terms of Aristotle's actual argument in *DA* II.2, two reasons are given for thinking that the non-theoretical parts of the soul are 'separable in account'. Of these the first is consistent with Aristotle having in mind mere difference in account, while the other looks like it requires the stronger notion of separability. Here is the first:

²⁴ Cf. e.g. *Metaph.* 1042a29, *Phys.* 193b4.

²⁵ Cf. *Metaph.* VII.1 1028a33–b1.

²⁶ Corcilius and Gregoric (2010) 96 'take it that "x is separable from y in place [τόπου]" means that x can have a location independent of the location of y, i.e. x can be found at a place at which y is not found'. This explication does not distinguish clearly enough between cases where x and y have different extensions and cases where they have non-overlapping extensions since in both cases x can be found at a place where y is not. Aristotle, when he imagines the separation of plants and worms, clearly has the latter in mind, as Corcilius and Gregoric also recognize (116).

But that they are different (*heteron*) in definition is clear, for what it is to be capable of perceiving is different from what it is to be capable of opining, if indeed perceiving is different from opining, and similarly for each of the others which were mentioned above. (DA 413b29–32)

The parts are here presented as capacities and capacities differ if their corresponding activities differ. Aristotle's use of 'different' (*heteron*) allows for cases where terms do not share a common term. So in *Metaph.* 4.9 he allows for a strong sense of 'different' according to which things are different if they don't share a genus, which for standard definitions *per genus et differentiam specificam* would exclude any definitional overlap.²⁷ But nothing Aristotle says explicitly in the first argument commits him to such a strong sense of 'different': he may as well just be saying that the parts of the soul are not the same in account.

The second argument seems, however, to support the stronger notion of separability:

Moreover, these all belong to some of the animals, while some of them belong to some animals, and one alone to the rest; for this makes the difference of animals.²⁸ For what reason, we need to consider later. And something similar is true of the senses: for some animals have all, others some, while yet others have the most necessary, touch. (413b32–414a3)

Aristotle thinks that the distribution of parts of the soul across different living beings in some way supports his claim that these parts are different in account. What he has in mind may be the following. If A and B exist in one kind of living being and A only in another kind of being, then A must be separable in account from B. For if A is realized in a living being without B, then the being of A cannot depend on that of B. But, since the being of something is that which you define, it must be possible to define the being of A without reference to the being of B. The definition of A must, therefore, be separable from that of B.²⁹ The underlying assumption here is that existential separability implies ontological separability and ontological separability implies definitional separability.³⁰ Accordingly, it must be possible to define the nutritive soul independently of the perceptual soul, if it is possible for the nutritive soul to exist without the perceptual, a possibility demonstrated by the case of plants. Since we can define the soul of plants and the soul of plants consists entirely of the nutritive kind, it must be possible to define this kind without reference to other kinds of soul. Similarly, it must

²⁷ *Metaph.* 1018a12–15.

²⁸ ὁμοίως δὲ καὶ τῶν ἄλλων ἕκαστον τῶν εἰρημένων. ἔτι δ' ἐνίοις μὲν τῶν ζώων ἄπανθ' ὑπάρχει ταῦτα, τισὶ δὲ τινὰ τούτων, ἑτέροις δὲ ἐν μόνον (τοῦτο δὲ ποιεῖ διαφορὰν τῶν ζώων). Contrast Corcilius and Gregoric (2010) 104, who translate the bracketed text 'this is what makes a difference among living beings'. As they note (88, n.8) this requires emending (as at 413b32) the agreed reading of the manuscripts, τῶν ζώων, to τῶν ζώντων. Understanding the difference as a differentia of animals avoids such drastic measures. We need not be surprised that ταῦτα, via τῶν ἄλλων ἕκαστον τῶν εἰρημένων, here refers to the non-nutritive capacities. The nutritive capacity as a differentia of plant soul has already been acknowledged at 413b16–19: since then we have been talking about other differentiae (περὶ ἑτέρας διαφορὰς τῆς ψυχῆς, 413b19–20).

²⁹ Corcilius and Gregoric (2010) 93–4, n.19, recording a debt to Andreas Anagnostopoulos, make this kind of point.

³⁰ One may compare the way in which ontological priority implies definitional priority on the plausible reading of Aristotle's *Metaphysics* of Peramatzis (2008).

be possible to define the perceptual soul without the intellect since animals show that the perceptual soul can be realized without an intellect. The distribution of parts of soul across living beings shows, then, that the 'lower' parts of soul can be defined independently of the higher. It seems, then, on the basis of Aristotle's second argument, that he has the stronger notion of separability in mind.

One might think that the fact that the perceptual soul cannot exist without the nutritive soul shows that it is not definitionally separable from nutrition, just as the fact that the nutritive soul is separable in existence from the perceptual shows that it is separable from perception also in account. But this would of course be an invalid inference: that fact that definitional separability follows from existential separability shows nothing about definitional inseparability following from existential inseparability. There are lots of external factors (say the law of gravity) on whose existence human beings may rely that are not part of our definition as human beings. This is one reason why it is worth distinguishing existential from ontological separation, that is, separation in terms of what the thing is, taken in the sense of its essence. Ontological inseparability may plausibly be taken to involve definitional inseparability in a way existential inseparability cannot.

The second argument in favour of the parts' being separable in account suggests the stronger notion of separability. On this view, the nutritive part can be defined without reference to the perceptual, the perceptual without reference to the rational part. So far, however, nothing has been said to show that separability applies in the opposite direction, for example that the perceptual part is also separable in definition from the nutritive or the rational from the perceptual and the nutritive. It remains possible that while one could define the nutritive part independently of the perceptual, one could not define the perceptual independently of the nutritive.³¹

³¹ The argument of this chapter had been formulated by the time I had access to Corcilius and Gregoric (2010). While we agree that the capacities of the soul that for Aristotle constitute parts of soul enjoy definitional independence, we have rather different views on the how and why. I have already traced some of these differences in the footnotes. But here are perhaps the most important ones. While Corcilius and Gregoric are right to take the separability of parts to be strong and symmetrical for Aristotle, they do not show why, given that the strong separability relation is not inherently symmetrical, Aristotle should think the symmetrical notion justified for the parts of soul *as parts*. (Their article is limited to considering the relationship of parts to other parts, rather than that of the whole to the parts, so there is admittedly less scope for them to develop the sort of answer I have put forward here, or an alternative. Still I would urge that the question of what constitutes a part *has* to be answered in the context of the capacities' role in the definition of the whole soul.) To argue as they do, rightly, that the capacities of the soul that constitute the parts, nutrition, perception, and intellect, are defined in such a way that the definitions do not make reference to each other, shows that they are *as capacities* symmetrically separable. But we should not confuse the candidates with the job description: it is one thing to show that the capacities as defined satisfy the criterion of definitional separability, it is different matter to show that Aristotle's conception of a *part* of soul is to be such. What we need first is to find Aristotle's reason for adopting a certain criterion of parthood which involves strong symmetrical separability, and then to see how certain capacities satisfy this criterion. The theoretical intellect also shows that being a capacity of soul which is separable in definition is not sufficient for being a part of soul since it is a different kind of soul (413b26). They try to counter the problem of the theoretical intellect by saying it is a part of the human soul: 'In those human beings who develop the capacity for theorizing, or while they exercise it, the capacity for theorizing seems to exist together with all the other

One problem that immediately would arise if one were to accept the option of asymmetrical separability is that it becomes impossible to count parts according to their status as separable. Recall that Aristotle already in *DA* I.1 worried about how to differentiate the parts of the soul: 'it is difficult', he said, 'also to define these [sc. the parts], which are by nature different from each other' (*DA* 402b11). Asymmetrical separability compounds the problem, for while the nutritive soul is separable from the perceptual, the perceptual is not separable from the nutritive. So it is unclear whether these are one or two parts, if we use separability in account as a criterion for parthood. We end up with in the baffling situation whereby the nutritive and perceptual capacities are one part from the point of view perception but two from the point of view of nutrition. For nutrition is, then, separable from perception, but not vice versa. Separability ceases then to be a useful criterion for counting parts.

However, I think we have already been given a good independent reason to think that the parts of the soul are separable in a way that is both strong and symmetrical. The reason lies in the way the parts of soul figure in the definitions of the various kinds of soul. Each of the parts of soul serves not just as an element of a certain kind of soul but also as a differentia of a certain kind of soul. If perception serves as a differentia of

capacities of the soul, and hence it can be regarded as a part of the soul' (93). But 'existing together with my, or human, soul' hardly means 'being a part of my, or human, soul', and if the active intellect is god (as they seem to acknowledge) it had better not mean this. The appropriate conclusion seems to be that being a capacity of soul that is definitionally separable is not a sufficient condition of being a part of the soul, though it is a necessary one. Their discussion of why the nutritive capacity does not count as a part in plants in fact suggests what is missing: in order to be a part of soul, the capacity also has to be present as a part in what a plant is: but the nutritive capacity is not a part of what a plant is, rather it is the whole of plant soul. By the same token a capacity is only a part of soul if it enters as a part into the definition of a certain kind of soul. The problem of not keeping the criterion of parthood distinct from the candidates is also evident in Corcilius and Gregoric's discussion of the locomotive capacity. They say that the reason why Aristotle is not clear in *DA* II.2 about the criterion of parthood, particularly whether it is weak or strong separability, is to keep the locomotive capacity in play as a possible part until the discussion of locomotion in *DA* III.9–10. But it is one thing to keep it open whether a capacity is a part according to a certain criterion, and another to keep what counts as the criterion open. This cannot simply be a matter of keeping the door open for locomotion, for if weak separability as a criterion of parthood is kept open as an option until III.9, then a whole host of possible parts will be kept in play until then, not just locomotion, but also, by their own count, those mentioned in II.2, imagination, desire, pleasure and pain, and elsewhere, memory, recollection, dreaming, and so on (cf. Corcilius and Gregoric (2010) 85). We would have no criterion then for selecting the capacities Aristotle chooses as parts of the soul until in the best case III.9–10. Moreover, as Corcilius and Gregoric acknowledge, while Aristotle offers plenty of critique of the Platonist conception of parthood in *DA* III.9–10, there is *still* no explicit answer as to what counts as a part emerging from these chapters. They therefore end up taking III.9–10 as somehow indirectly confirming a criterion that was implied by, but somehow also left open in, II.2. On my reading these problems do not arise since Aristotle takes it to be clear by II.2 that parts of the soul are those capacities that are parts in the definition of the soul. It should be noted finally that Corcilius and Gregoric are well aware of the relevance of the parts of soul to the definition of the various kinds of living being. On their reading, however, the parts of soul are *confirmed* as basic explanatory principles by their role in explaining the various kinds of living being but their status as parts is established prior to this confirmation by their being capacities which are definitionally primitive and separable (cf. Corcilius and Gregoric (2010) 113 and Corcilius (2008) 52). On my reading, in contrast, the notion of parts of soul is always indexed to the soul of certain kinds of living being, because, as shown by *DA* II.3, this is the only level at which one can give real definitions of soul.

animals, as Aristotle said at 413b33–414a1, then the definition of perception cannot make reference to nutrition. Why not? Assume that nutrition is an element in the definition of perception, then what distinguishes animals from plants (i.e. perception) itself makes reference to what animals have in common with plants (i.e. nutrition). But perception as a differentia is supposed to make animals different from plants. So the definition of perception cannot depend on that of nutrition, if perception is a differentia of animal soul. Moreover, if perception is a differentia of animal soul it follows trivially that the perception is not an element in the definition of nutrition. Otherwise one would in attributing nutrition to plants also ascribe perception to them. But having perception is supposed to make animals different from other living beings. It follows therefore that if the parts of the soul work as differentiae in the definition of the different kinds of soul that their definitions are mutually separable; symmetrically separable in the strong sense, that is.

Now for some objections and clarifications. One might reasonably object that it is one thing for the definition of X to make reference to Y; it is quite another thing to attribute Y to everything X. So a definition of perception could make reference to nutrition without attributing nutrition to things that have perception. Compare, for example, the case of 'bloodless', whose definition will no doubt make reference to blood, but may still serve to differentiate some animals from the blooded ones. (The example raises interesting issues about Aristotle's use of privative terms in definitions.)³² Or the definition of slave may make reference to master without implying that everything that is a slave is also a master. It is one thing to refer to a property in a definition; it is another thing to attribute it to what is defined.

The point may be correct for the cases referred to but it does not affect the question of separability in account of *parts*, since it is already assumed by calling the elements of the definition 'parts' of the soul that they are attributed to the soul defined. The question is given that two capacities are parts of the soul, is there reason to think that the definition of the one makes reference to the other, or is there reason to think that it does not? The answer is that given that one part is supposed to differentiate the being of one kind of living being from another, it makes sense to say that such a part as differentiating should not itself make reference to the part which those living beings have in common, again assuming that a part so referred to is also attributed to the soul.

Another worry is that picking out parts of the soul on the basis of their being differentiae of certain kinds of living cannot be right if the same parts of soul are also held in common by other kinds of living beings. So how can nutrition, for example, be a differentia of plants if it is also common to animals? It is no surprise, however, that a capacity of soul that works as a differentia in relation to some beings, also works as a common attribute in relation to others. This double role of an attribute as a differentia at one level and a shared attribute a lower level of division is a common feature of

³² Cf. Lennox (2001) 155.

hierarchical orders. The notion of a differentia is in such orders level-specific. So nutrition is a differentia of plants in relation to non-living ones—we say that plants are alive because they take nutrition—but it is a shared attribute of plants and animals. What matters from the point of view of my argument is that if a capacity is to serve as a differentia at some level in the hierarchy, then it has to be definitionally independent from other capacities at that same level of division. So if perception is to distinguish animals from plants within living beings, then it has to be definitionally independent from nutrition.

It is important to be clear in this context that while the definitional independence here is symmetrical there is no implication that independence is transitive. If A is independent of B, and B depends on C, it does not follow that A is independent of C. So it does not follow from perception's being independent of nutrition, and nutrition depending on some other term C, that perception also independent of C. So, in the case of species defined by genus and specific difference, snake may be definitionally independent of cat in that what makes cat the species of animal it is, the specific difference, is independent of the sort of difference that makes snake the animal it is.³³ However, the definition of both will mention animal. Similarly, it could be that the definitions of nutrition and perception both mentioned some term that they had in common as capacities of soul, while neither would make reference to the other capacity. It has not been shown yet, therefore, in response to the question of I.1 that there is no common term for the various parts of soul, nor that such a term could not have the status of a genus. The clarification of these options arises only when we turn to *DA* II.3.

Now given that the parts of the soul are symmetrically separable, definitional separation can serve as a criterion whereby to differentiate and count parts of soul. The criterion allows us to distinguish features of the soul that are parts from those that are not. Consider the list in II.2 413b22–4 of features that follow from having perception: *phantasia*, pleasure and pain, and desire. Given that these features follow from having perception, it seems fair to say that they are not separate in account from perception, and so do not constitute parts in their own right. So in order to say what it is to have pleasure and pain you have to make reference to perception. Similarly, Aristotle's account of *phantasia* makes essential reference to perception.³⁴

However, if you necessarily have *phantasia* when you have perception³⁵ (and only have *phantasia* when you have perception, let's add),³⁶ why can't *phantasia* equally serve as a distinguishing feature of animals, and so on my criterion as a part of soul? For on

³³ More fundamentally, the argument from differentia would prove far too much if the thought was that definitional separateness of X and Y excluded that X and Y could make reference to a common term. For since all terms ultimately make definitional reference to 'substance' there would be no definitional independence between any of them.

³⁴ *Phantasia* is a change arising from perception according to *DA* III.3 429a1–2.

³⁵ Notwithstanding 413b22, Aristotle denies *phantasia* to some animals at 415a10–11 and 428a10–11.

³⁶ So formulated, the assumption does not exclude a distinct form of rational *phantasia*, cf. *DA* III.10 434b29.

this account animals will be animals if and only if they have *phantasia*. And similarly for pleasure and pain and appetitive desire. The answer is that animals do not have perception by virtue of having *phantasia*, rather they have *phantasia* by virtue of having perception. Animals are not animals by virtue of having *phantasia*, because there is a more basic capacity by virtue of which they have *phantasia*, namely perception. So we need to clarify the criterion of parthood which says ‘a part is a capacity of soul whereby one of the different kinds of soul is defined in the manner of its differentia’. A differentia does not just offset the definiendum from other kinds: a unique property (*idion*) of animals such as *phantasia* could do that job. Rather what is meant by a *differentia* is a characteristic that makes the kind of living being the specific kind it is. Perception answers to this description in the case of animals. We might relate this clarification to Aristotle’s point (413a33–b2) that the *dunamis* we are looking for at this stage in the account of the soul are also *arkhai*, principles, for those living beings. It is perception that explains why animals have *phantasia*, rather than the other way round. So it is perception rather than *phantasia* which serves to define the animal soul.³⁷

We may address the difficult case of locomotion from this point of view. Let me briefly summarize the interpretation developed in Chapter 12.³⁸ Locomotion is *prima facie* a difficulty for the claim that the parts of the soul are mutually independent in definition. For, as we learn in *DA* III 9–12, locomotion is caused by desire and *phantasia*, either perceptual or intellectual. The account of the locomotive capacity therefore depends on perception or intellect or both. Yet Aristotle at first (413b13) presented the locomotive capacity as one of the parts. However, he also warned us early on of the difficulty of determining which were the different parts of soul (402b10–11), a warning which the introduction to the discussion of locomotion specifically seems to recall (432a22–3). The upshot of this discussion is that the locomotive capacity, like *phantasia*, is a further function of the perceptual or intellectual capacity. Locomotion is caused either by appetitive desire (*epithumia*) with *phantasia*, where both of these are aspects of the perceptual capacity in animals, or by the rational desire (*boulêsis*) and intellect in humans. Locomotion depends then on recognized capacities, and Aristotle’s answer to his own question raised at the beginning of *DA* III.9 is that the part by which animals move in space is to be found amongst the parts he has already dealt with, once we fully understand the functions of those parts.

One indication that this is the right sort of approach to dealing with locomotion is that we find variation with respect to locomotion in animals to the extent that we find

³⁷ Franz Brentano saw more clearly than most that Aristotle does not take being a capacity in itself to establish parthood. He took Aristotle’s idea of what constitutes a part of soul rather to be those capacities that distinguished the major life forms: ‘when A distinguishes parts of the soul, he does so mostly with respect to those parts in its domain of powers which are separable by reference to the species’ (Brentano (1867) 38, referring to *DA* 415a25, 16a19, a21; cf. also Brentano (1867) 57). This seems right if by ‘distinguishing’ we understand in the manner of a differentiating part of a definition, rather than just a unique non-essential feature, and if we take ‘species’ loosely to refer to kinds at a variety of levels of generality.

³⁸ Corcilius (2008) argues for a similar view of the relationship between locomotion, desire, and the perceptual capacity.

variation in functions of the perceptual part. Only those animals capable of *phantasia* move and only those animals capable of determinate *phantasia* display determinate locomotion, those which lack determinate motion (*kineitai aoristôs*, 434a4)—perhaps they wiggle about with no purpose—also only have indeterminate *phantasia* (*DA* III.11). The suggestion then is that further differentiations between animals with respect to locomotion can be understood in terms of further differentiations within the perceptual or intellectual parts. This point brings us back to the claim about *phantasia*, that the reason why it does not count as a part of soul, but perception does, is that perception is explanatorily basic in relation to *phantasia* in the lives of animals. It is perception that differentiates animals as what they are, not *phantasia*. Similarly, perception is explanatorily basic in relation to locomotion. We understand how animals differ with respect to locomotion by bringing these differences back to differences in their perceptual capacity.

I have suggested that *DA* II.2 gives us a way of thinking about parts of soul as elements in the definition of the different kinds of soul. Insofar as the elements work so as to differentiate the various kinds of souls from each other, it is implied that they are definitionally independent of each other. As definitionally independent, they can also be distinguished from each other and from those features of soul which definitionally depend on them. The notion of parthood thus gives us a way of structuring the soul: its primary features are the parts, capacities like perception which are fundamental to a certain kind of soul in the sense of defining it, its secondary features, are functions like *phantasia*, pleasure, pain, and desire, which definitionally depend on the primary features. We might say, then, that identifying the parts of a soul gives us the key to its architecture.

Kinds in the Definition of Soul

I have suggested that the primary notion of parts of soul, developed by Aristotle in Books I and II of the *DA*, is that of a part of the definition of soul. But how do these parts figure in the definition of soul and how, if at all, to return to our original question in *DA* I.1, do they allow for a unitary definition of soul? Answers emerge from *DA* II.3:

It is clear, then, that there is one definition of soul in the same way as there is one definition of figure: for in the one case there is no figure beside triangle, and the rest, nor is there any soul apart from those mentioned. Again, in the case of the figures a common definition might be constructed which would fit them all, but would be peculiar (*idios*) to no figure. The case with the souls we mentioned is similar. That is why it would be ridiculous here as elsewhere to seek the common definition which will be a peculiar definition of none of the things that are, nor in accordance with the proper (*oikeios*) and indivisible species, whilst neglecting such a definition. The cases of figure and soul are parallel; for both in the case of the figures and the ensouled beings, the earlier is always present (*hyparkhei*) potentially in the subsequent, for example, triangle in quadrangle, the nutritive in the perceptual. Hence it is necessary to inquire in the case of each, what is the soul of each? That is, what is the soul of plant, man, or beast? (*DA* II.3 414b20–33)

Recall Aristotle's injunction in *DA* I.1: 'we need to pay attention to whether there is one account of the soul, just as there is of animal, or whether there is a different account for each species, such as of horse, dog, man, and god, where the animal taken generally is either nothing or something posterior, in the same way as another common [predicate] might be predicated.' Aristotle's response in II.3 seems to be that while there might be a common term for the different species of soul—and the common account of II.1 may suit the bill—definitional priority goes to the species. However, it also seems clear that the common term does not have the status of genus. This follows from the claim that the species of soul are ordered in a series like geometrical figures.

To see why membership of series should exclude membership of a genus, we need to be clearer about what a 'series' (*to ephexês*) is. First, the terms of a series are organized by order of priority: first, second, third, and so on. Second, the priority is such that the second term would not be without the first, the third not without the first and the second, and so on. Third, nothing else can be prior in this way to the first term of the series.³⁹ The kinds of soul constitute a series in this way: nutritive, perceptual (touch, distance senses), locomotive, reasoning, with the perceptual faculties forming a sub-series with touch as its first member (414b33–415a5).

Why should the serial organization of species in a series, so understood,⁴⁰ preclude their falling under a genus? Alexander of Aphrodisias has a plausible answer. When several species are organized under one genus, removing (*anairô*) any one of the species will not necessarily affect the existence of the rest of the species, or the genus as a whole, whereas removing the genus will remove with it (*sunanairô*) all of the species.⁴¹ In contrast, where species are organized serially, removing one of the species, namely the first, will necessarily remove with it all of the other species, or more precisely, removing any term t_n in the series will remove any subsequent term $t_{n+1,2,3,\dots}$. Understood in this way, it is clear why any series of species cannot also be organized under a genus: within a series, the species depend for their being on other species in a way that is incompatible with their also bearing the relation to each other that species bear when falling under a genus. The serial organization of the species of soul is thus incompatible with their being species of a genus 'soul'.⁴²

What exactly are the terms of this series? Aristotle's language allows for doubt. At first he appears to talk about the kinds of soul (*tas eirêmenas*, 414b22; *epi tais erêmenais*

³⁹ The point comes out particularly clearly in Aristotle's criticism of Plato. Aristotle uses the series to exclude the existence of generic forms: if there were a generic form on which the terms of the series depended then the first term of the series wouldn't count as the first term. On the appropriateness or otherwise of this argument as a criticism of Plato, see Cherniss (1944), Appendix VI, and Woods (1992) *ad* 1218a1–8.

⁴⁰ The characterization of the series is thus compatible with some genera and species forming a series, cf. A.C.Lloyd (1962). What it is not compatible with is a series whose terms fall under a genus and whose first term is a species.

⁴¹ Bruns (1892) 23.

⁴² Pace Aquinas (*In Aristotelis librorum de anima commentarium*, II. Lec.5 no.295), followed by Achard (2004) 152–82.

psukhais, b24–5) And Aristotle's examples of the terms on the psychic side of the analogy are: the perceptual (neuter) or the nutritive (b31–2). But at 414b30 Aristotle also talks about the case of the *empsycha*, 'the ensouled', which points to the living beings that have the souls, rather than the souls themselves. Finally, when he draws out the implication for how we should define soul at b32, he says that we should investigate the soul of each living being, such as plant, man, or animal. So now the impression given is that Aristotle is concerned with the relationship between the souls of *different kinds of living being* rather than the kinds of soul themselves.

The ambiguity is resolved if we take the terms of the series to be the capacities of soul as indexed to different kinds of living being, that is, if we take the terms to be parts of soul in the sense I have suggested. So when we are investigating what perception is as a part of soul we are investigating the soul of a certain kind of living being, namely the kind of being essentially differentiated by perception: animal soul. When Aristotle lists the terms of the series, he is not referring to the capacities of soul in the abstract but as the differentiating features of the souls of various kinds of living being. Investigating what perception is, therefore, is also investigating what animal soul is.

Aristotle's insistence that we should define the soul at the level at which it exists implies that we should define the sorts of soul that characterize actually existing kinds of living being. But does this approach to the study of the soul not imply that we should really define soul at the level of the *infimae species* of living being? Should Aristotle not say that we should define the soul of geranium, cat, and dog, not plant, human being, and beast? In the *PA* Aristotle answers the parallel question concerning the *bodily* parts of animals:

There is, however, a puzzle about which of these two should be our subject. On the one hand, in so far as what is indivisible in form [*eidos*, traditionally translated as 'species'] is a substantial being, it would be best, if one could, to study separately the things that are particular and undivided in form—just as one studies mankind, so too bird; for this kind has forms. But the study would be of any one of the indivisible birds, e.g. sparrow or crane or something of this sort. On the other hand, in so far as this will result in speaking many times about the same affection because it belongs in common to many things, in this respect speaking separately about each one is somewhat silly [*hupatopon*: 'somewhat absurd' (LSJ)] and tedious. Perhaps, then, the right course is this. In some cases—whenever kinds are spoken of by people in a clearly defined manner and have both a single common nature and forms in them not too distant—we should speak in common according to kinds, like bird and fish and any other there may be that, though it is unnamed, embraces, like a kind, the forms within it. But whenever they are not such as this, we should speak one by one, e.g. about mankind and any other such kind. (*PA* I.4 644a28–b7, Lennox transl.)

Why should we not account for the parts at the level of *infimae species*, or 'last forms', when this is the level at which substance exists? The answer is not only that it would be boring; it would also be 'somewhat absurd', I take it because it would be to define parts of species of animals at a level that does not reveal why they belong to the species. Sense-organs do not belong to a cat *qua* cat but *qua* animal, because all animals as such

have sense-organs. Compare *APo* I.5 74a26–33: if you tried to demonstrate separately for each kind of triangle that each has internal angles equal to two right angles ‘you would not know [this], except sophistically . . . for you do not know [that it has two right angles] as a triangle, nor do you know it of every triangle, except in a numerical sense’. Likewise, if you want to know why each of the *infimae species* of animals has perception, you need to know this at the level of the genus ‘animal’, because it is by virtue of being animals that they have perception. This explains why we should study the parts of soul at the level by virtue of which the parts belong to those living beings.⁴³

Another implication of the discussion in *PA* is that there is no contradiction between accounting for the parts of animals at a general level and also attributing them to *infimae species*. If a part differs from species to species only by a matter of degree we can treat the species as all having the same part and define this part as common to all. It is only where the part differs in kind, as in the case of man whose reason differs in kind from any of the parts possessed by the other animals, that we need to account separately for that part. By the same token, we can in the *DA* treat the capacity of perception as a common kind for all the animals that have it. The intellect, however, while it belongs to a species of animal, man, is not to be treated as a version of a kind of capacity that belongs to other animals. In particular, it is not to be treated as a variety of perception, because it differs in kind from perception. So, while the intellect may be a specific difference of humans, it is not a specific difference of perception. This is in itself not surprising: while ‘winged’ may be a differentia of birds, there is no reason to think that what makes one kind of bird different from another should be a difference in being winged, rather than being, say, migratory or spotted. There is no tension between affirming that the intellect differentiates humans from other animals and denying that the intellect is a *differentia* of perception.

We have now also a way of dealing with another puzzle to emerge from *DA* II.3. Aristotle, as we saw, says that we need to define the soul of plant, man, and beast. But these are not, as kinds of living being, at the same level of generality. This would be a problem if we were defining living beings in the *DA*. Living being is divided into kinds like ‘plant’ and ‘animal’, and ‘human being’ is a species of the kind ‘animal’. So if we were defining living beings, we would by defining plant, animal, and human being be defining creatures at different levels of generality, and we might say that Aristotle had fallen victim to a confusion of levels. But in the *DA* we are not defining living being, we are defining soul. And there is no need for the differentiae of soul to be classified in the same way as the living beings whose souls they help define. So man is a species of animal, which is defined by perception as its differentia, and intellect is a differentia of man, but intellect is not a species or differentia of perception. Recall again the point from the *PA* that we account separately for a part in a species only where that part differs in kind from the parts possessed by the other species of the kind. So perception

⁴³ For an explanation of this methodological point in the *PA*, see Lennox (2001) 29–30.

can be treated generally at the level of animal, but intellect has to be defined separately at the level of man.

Aristotle in the *DA*, I have suggested, is defining the parts of soul as the *differentiae* of the souls of different kinds of living being. As *differentiae* they are parts of the essences of these kinds of living being. But they need not be understood as the *differentiae* of the *infimae species*. When Aristotle says in *DA* II.3 that ‘it would be ridiculous to seek a common account which was not a proper account of any of the things [living beings, I take it] that are, nor is in accordance with the appropriate and indivisible kind, while leaving aside such an account’ (414b25–8), it is not implied that ‘the account of in accordance with the appropriate and indivisible kind’ should be *unique* to the indivisible kind. Rather his sense is that it should apply to the indivisible kind as part of its account. And this is clearly the case with perception for animals: perception will enter into the account of the essence of all the species of animals, not because it is a *differentia* of them as the different species of animal, but because it is a *differentia* of them as animals. On the other hand, if, *per impossibile*, we tried to define the soul at a higher level of generality than perception, then the sort of soul we would be talking about would not enter into the definition of any species of animal.

The definition of the soul at the level of generality which the *DA* identifies is then well-motivated: the kinds of soul defined are the most general allowed for if these are also going to appear in the definition of the souls of the various kinds of living being that really exist. We might call this the ‘reality constraint’. But the kinds of soul are also the most specific that the definition of soul allows for if the parts of soul are going to appear in the definition of the souls at the appropriate causal level. For, as we saw, if we define the senses at a lower level of generality than that at which it applies to animals, then we fail to define them at the level by virtue of which they belong to the various species of animals, namely, the level of *animals*. We might think of this as the ‘causality constraint’ on definition. The ‘reality’ constraint from above plus the ‘causality’ restraint from below give us, then, the appropriate level of generality at which to define the kinds of soul that will serve as parts of the definition of soul.

Now the *PA* may plausibly be taken as aiming to account for the parts that characterize the various kinds of animals. So it has been argued by David Balme, Pierre Pellegrin, James Lennox,⁴⁴ and others, that the *PA* aims to account for those parts that differentiate and define animals. So the *PA* announces that ‘It is necessary first to divide the attributes associated with each kind that belong in themselves [sc. essentially] to all the animals, and next to try to divide their causes’ (645b1–3, transl. Lennox).⁴⁵ From the point of view of causes the soul comes first. We understand the bodily parts in relation to the psychic functions they serve:

⁴⁴ See, for example, Pellegrin (1986), Balme (1987), Lennox (2001).

⁴⁵ The *HA* is seen in the same context as identifying the same differentiating parts but without giving the causal explanation of those parts that the *PA* provides.

Clearly one should state that the animal is of such a kind, noting about each of its parts what it is and what sort of thing it is, just as one speaks of the form of the bed. Suppose what one is thus speaking about is soul, or a part of the soul, or is not without soul . . . – if these things are so, then it will be up to the natural philosopher to speak and know about the soul; and if not all of it, about that very part in virtue of which the animal is such as it is.’ (*PA* 641a14–22, transl. Lennox)

It is the soul, as the form of the animal, that primarily constitutes its nature, and so is the primary object of the natural philosopher’s attention; and more precisely, since the soul has parts, it is the part of the soul by virtue of which animals are animals. The *DA* can, on my reading, readily be seen as a first step in the same project. The *DA* is fundamental to the study of the parts which differentiate animals. First, since the soul is the form, efficient, and final causes of the body, by accounting for the basic parts of soul the *DA* also determines the highest level causes of those bodily differences which the *PA* seeks to explain. Second, the *DA* explains, at the highest defensible level of generality, those capacities that go into differentiating the different kinds of animal. Animals are differentiated by their modes of nutrition, perception, locomotion, and intellect, if any, in a way that presupposes the definitions, in the *DA*, of those capacities. We might think of the parts of the soul as the *megista genê* that by differentiation go into defining the actual different kinds of animals and other living beings.

Unity

Now in the absence of a common genus for soul the question arises: what, if anything, unifies the various species of soul?⁴⁶ A common genus would have offered us what might be called a ‘vertical’ unity between the different kinds of soul. That is to say, a common genus would have shown at a higher level of generality the common property whereby they would all be kinds of ‘soul’. So far we have considered the serial organization of the kinds of soul simply from the point of view of its precluding a unitary *definiendum*. However, serial organization may be thought, more positively, also to offer a way in which one can think of the kinds of soul as united. The unity here is not of the vertical sort offered by the genus. Rather what emerges is a kind of *horizontal* unity, namely, a kind of unity between the souls as parts of soul within each kind of living being. Aristotle said that in the series ‘both in the case of the figures and the ensouled beings, the earlier is always present potentially in (*hyparkhei dunamei en*) the subsequent, for example, triangle in quadrangle, the nutritive in the perceptual’ (414b29–32). So each kind of soul contains within itself in potentiality any previous kinds of soul in the series.

When Aristotle in *DA* II.3 points to the *potential* presence of the previous kinds of soul in the higher kinds, it can, therefore, be read as a way of stressing the unity that the

⁴⁶ *Pol.* III.1 1275a34–8 puts the problem pointedly: ‘we must not forget that things of which the underlying principles differ in kind, of them being first, another second, another third, have, when regarded in this relation, nothing, or little (*gliskhrôs*), in common.’

parts of the soul enjoy by standing to each other as potentiality to actuality. We have a possible parallel for this kind of potential presence in *Metaph.* H.6, where Aristotle solves the problem of the unity of the parts of the definition, genus and specific difference, by saying that the genus stands to the specific difference as potentiality to actuality. However, the whole point of *DA* II.3 was of course that the parts of the soul do *not* stand to each other as genus to species. How might we then, while holding on to the unifying character of the potentiality–actuality relationship, think of the capacities of the soul as unified? My suggestion will be that we can think of the lower parts of the soul as present in the higher in the way matter is present in the whole. This model gives Aristotle access to the notion of unity in terms of potentiality and actuality, since he thinks that the way the matter is related to the substance of which it is a part represents this kind of unity in a particularly strong and intuitive way.

Let's start by noting that one way in which we can talk about parts is as the matter in relation to the whole. As Aristotle says in *Metaph.* Δ.25, 'the elements into which the whole is divided, or of which it consists—the "whole" meaning either the form or that which has the form; e.g. of the bronze sphere or of the bronze cube both the bronze—i.e. the matter in which the form is—and the characteristic angle are parts' (1023b19–22).⁴⁷ Suggesting that the part is present in the whole in the manner of matter makes good sense of the geometrical example in *DA* II.3: the triangle is present as a part of the extension of the triangle quadrangle. We can of course also construct a quadrangle out of triangles, and exclusively out of them, though there is no need to think that Aristotle's point requires us to think that the earlier member of the series is the only material part of the subsequent. The key point would be then to make sense of the nutritive soul being a part of the perceptual soul as its matter.

This claim may seem immediately to stumble upon three problems. One is that Aristotle says the nutritive is potentially present in the perceptual soul, but surely the nutritive is not a part of the perceptual soul. So if the quadrangle in the analogy compares to the perceptual soul, and the triangle to the nutritive, the analogy would be quite misleading, if again it is concerned with the part–whole relationship. Let us recall, however, that the terms of the series on the side of the soul are the capacities of soul of kinds of living being, not as nutritive soul or perceptual or intellectual capacity taken in isolation, then, but as capacities characterizing the souls of actual living beings. Hence Aristotle's wording when he says that that the geometrical figures and *the ensouled beings* (*ta empsykha*) are alike. The containment relation between the perceptual and nutritive soul is thus one that obtains within an ensouled being that has both. We are not being asked to believe, then, that the perceptual soul as such contains within itself the nutritive soul. This would indeed be problematic, also given my argument for the definitional separability of the perceptual and nutritive souls from each other. What we *are* being asked to entertain is rather that the soul of any living being which has a

⁴⁷ ἔτι εἰς ἃ διαίρεται ἢ ἐξ ὧν σύγκειται τὸ ὅλον, ἢ τὸ εἶδος ἢ τὸ ἔχον τὸ εἶδος, οἷον τῆς σφαίρας τῆς χαλκῆς ἢ τοῦ κύβου τοῦ χαλκοῦ καὶ ὁ χαλκὸς μέρος (τοῦτο δ' ἐστὶν ἡ ὕλη ἐν ᾗ τὸ εἶδος) καὶ ἡ γωνία μέρος.

perceptual soul will also thereby, that is, by the fact of its having a perceptual soul, contain within itself a nutritive soul. We may reaffirm the analogy with the geometrical figures, then, by saying that just as any figure which has four angles will also have as a part a triangle, so any living being with a perceptual soul will also have a nutritive soul as a part.

However, another problem now appears, namely that saying that the nutritive soul is potentially present within a living being with perception may suggest that it is not actually present. But this cannot be right: animals eat, drink, and procreate, so their nutritive soul must be present in activity. Again, this is to misread the import of saying that the nutritive soul is potentially present in the perceptual soul. The claim is not that the nutritive soul as such is not actually present in an animal; the point is rather that it is implied in saying that the living being has perception that it also has nutrition. One may align the implication to the way in which matter is determined by form in hypothetical necessity. By saying that there is an axe we are implying that there is matter of a certain sort, iron, wood, and such-like. We can say then that the matter is potentially present in the form in that it is implied that something with such a form will also have such-and-such matter. But this is of course not to say that iron and wood, or whatever the materials the axe is made of, are not also actually present in the axe. It is just from the point of view of the axe having a certain form, it is also implied that the axe is also made of certain matter.

This is not to reduce the notion of being potentially present to an inferential relationship; rather it is an inferential relationship based on an existential dependency of one part on another: one part, the nutritive provides a potentiality for the perceptual, without the nutritive there will be no perceptual capacity, or put differently, given the perceptual capacity, there is also the nutritive capacity or, alternatively, in saying that the perceptual capacity is there we have also said that there is a nutritive capacity. Expressing the relationship like this should again underline that the point is not that the nutritive soul is *merely* potentially present in the animal soul (let alone in the perceptual soul); rather it is by the animal actually having a nutritive soul in the first place that it can have the perceptual capacity, given the existential dependence of the perceptual on the nutritive.

This last point should be of help with a final difficulty. Do we not have to say that *as parts* both the nutritive and the perceptual soul are both potentially present in the whole animal souls? However, we need to bear in mind Aristotle's idea that it is the perceptual soul that properly defines an animal and characterizes it as such. We may also understand why the nutritive soul will be treated differently as present potentially in the perceptual soul rather than the other way around. For form as we know is aligned with fulfillment. While both the perceptual and the nutritive souls are present as parts of the animal soul, and are present as actual, the perceptual soul is present as a defining part. So there is a point of view from which we should single out the perceptual soul as the one in which the nutritive soul is potentially present rather than the other way round.

This is perhaps the time at which to note also the ambivalence in Aristotle's phrasing in the passage we began with from *Metaph.* Δ.25: the 'whole' could be taken either as the form or that which has the form, that is the compound. There is a sense, then, in which we can talk of the matter being part of the form, and so of the nutritive soul being part of the perceptual soul, though the most likely way of taking this is to mean that matter is part of the substance which is defined by form. It is in this way I have been suggesting that we can talk about the nutritive soul as a part of the perceptual soul given that the perceptual soul is properly the form of the whole animal.

I have said that the various parts of soul are unified within the whole soul standing as potentiality to fulfilment in the manner of matter and form. This gives us a model for understanding the unity of the object of definition, which was a requirement for the soul to be an object of scientific understanding. However, it is not clear yet how the unity of the object would be represented in the definition of soul. Specifically, it is not clear yet whether, and if so how, the fact that the object of definition is a unity of parts of the sort I have suggested is reflected in the definition. Does the fact that an animal soul, for example, has a perceptual and a nutritive part necessarily show up in the definition of animal soul and, if so, how? One might infer from the claim that the prior term in the series is present only potentially in the subsequent term, that the definition of the subsequent term will contain no explicit mention of the earlier term. So the definition of the animal soul will make reference to the perceptual soul, but not to the nutritive soul. The nutritive soul might be presupposed by such a definition of animal soul, for example, in the sense that it is a necessary condition of perceptual soul. For Aristotle, after all, essential definitions are of something actually existent, and there would be no perception, and so no animals, if what had perception did not have nutrition. However, it is clear that not all the necessary conditions for something's existence make it into the definition of that thing. There are lots of conditions necessary for an animal to live, for example, heat, which are no part of the definition of animal soul.

However, we may think that nutritive should be part of animal soul because nutrition is part of what makes the animal alive; it is a cause of a range of its life functions. Since living is being in the sense of *ousia* for an animal, and its living includes performing a range of nutritive functions, nutrition belongs with perception as a part of the form of an animal. It belongs not, to repeat, as the part that specifically makes it an animal, but as part of what makes it a living being that can be specified as an animal. Aristotle, after all, said that 'the animal is said to be *primarily* because of perception', where we need to read the 'primarily' in the context of the whole clause: 'Living belongs to living beings because of this principle [sc. the nutritive], but the animal are primarily because of perception' (413b1–2). The thought is that the soul is a principle of both living and perception, where both nutrition and perception belong to the soul of animals, but it is latter that characterizes animals as different from other living beings. It seems clear then that both nutrition and perception belong to the essence and definition of animals *qua* ensouled.

It should be clear that characterizing, as I have done, the relationship between the nutritive soul and the perceptual soul within the animal soul as one between matter and form does not stand in the way of also thinking of the nutritive soul as part of the definition of animal soul. We see, after all, Aristotle in *Metaph. H.6* align the genus in a definition to matter and species to form, so it is clear that we can think of the matter–form relationship as obtaining between the terms within a definition.

If all of this is right, however, (at least) one last question arises. If both nutrition and perception belong to the animal soul and are one, as I argued, by standing to each other as potentiality to actuality in the manner of matter to form, can one also maintain, as I argued, that nutrition and perception are separable in definition? Should we not give definitional priority to the whole animal soul over the parts? One thought that would justify giving priority to the whole is that it is only in the context of the whole that the parts can fulfil their function. This, clearly, is how Aristotle thinks of the bodily parts in relation to the whole organism.⁴⁸ We might think similarly that the parts of the soul are definitionally posterior to the whole soul insofar as each part can only perform its proper function in relation to the whole. The account of the nutritive soul ought somehow then to be significantly different according to whether we considered it as a part of the soul of an animal or that of a human being, for example, since nutrition performs different functions in the context of those different wholes.

I think it is clear that Aristotle wants ultimately to integrate the parts of soul as defined in the *DA* in accounting for the various functions of the different kinds of living being: already his account of locomotion in *DA* III 9–11 is a step in this direction, as are the accounts of the teleological relationship between nutrition, locomotion, and perception in Book III.12–13. However, that this is not Aristotle's *primary* perspective on the definition of soul seems clear from both his practice in the *DA* and his theoretical reflections in the *Metaph.* In the *DA* the definitions of nutrition and perception make no reference to each other. The account of nutrition is general without differentiation made between plant, animal, or human nutrition. The five senses are defined without distinction made between human and animals. The accounts of thinking and perception make reference to each other by analogy, but this is a not a definitional dependency. This practice could not be justified if Aristotle thought that the definition of nutrition or perception had to differ according to the various whole souls to which it belonged. A theoretical justification for this practice appears in *Metaph. Z.10* (1035b4–25) where he says that the parts of the definition of the *form* are prior to the definition of the whole form, as well as to the definition, if one can even call it that,⁴⁹ of the compound form and matter. He uses the soul as the form of the compound animal as his example, and is explicit, at 1035b14–18, that from the perspective of defining the soul itself as the form of the animal, the parts of the definition of the soul are prior to the whole definition and to the compound living

⁴⁸ Cf. *Pol.* I.2 1253a19–27.

⁴⁹ See Frede (1990) for a negative answer.

being. *Metaph.*Z.10 thus presents a view of the parts of the soul—understood in the way I have recommended in this chapter as parts of the definition of soul—according to which they enjoy definitional priority over whole. So the passage gives us an alternative to the holistic view which threatened the definitional separability of the parts. Indeed, we may think that *Metaph.*Z.10 provides independent evidence in favour of the definitional separability of the parts of the soul: for if either nutrition or perception depended definitionally on the other, then they could not each enjoy definitional priority over the whole which they together constitute as the definition of animal soul. Recalling the question Aristotle posed in *DA* I.1 402b9: ‘if there are not many souls, but parts of soul, is it necessary to inquire into the whole soul first or into the parts . . .’, we can see in the *Metaph.* passage a theoretical justification of the *DA*’s choice of inquiring into the parts of the soul first.^{50,51}

⁵⁰ Klaus Corcilius points out that one might query this claim given that Aristotle starts in *DA* II by giving an outline account of the whole soul. However, as *DA* II.2 shows, Aristotle does not take this outline account to be a proper definition of the essence of soul, which is the sort of definition I have been concerned with here.

⁵¹ In addition to the participants of the 2009 Berlin conference on Parts of the Soul, I would like to thank audiences at the Southern University of Denmark (2003), the Universities of Sterling (2003) and Edinburgh (2004), and the Cambridge B Club (2007) for stimulating feedback on earlier versions of the chapter. I am also grateful for discussion with David Charles, Ursula Coope, and Jessica Moss. In the final revision of this chapter for publication I owe a particular debt to Klaus Corcilius and Lindsay Judson for insightful comments.

4

The Definition of *Dunamis*

In the Chapters 2 and 3, I argued that Aristotle sought a definition of the soul which would show it to be the cause of life. Since life was expressed in different ways this definition broke down into an account of the various ways the soul was a cause of life. This causal role was expressed in terms of the soul's being in each case a capacity for the particular activity: nutrition, perception, locomotion, knowledgeable thinking. Each of these capacities represented a part of the soul—with special qualifications for locomotion—on the basis of their role as elements in the definition of soul. The next step in the account of soul must now be to clarify what a capacity (*dunamis*) is, and what a capacity of the soul is such that it can play the role of causing the various life phenomena.

The *DA*, as I have emphasized, is a work of natural philosophy relying for its explanatory principles on the *Phys.* and *GC*. It is in the *Phys.* that we learn about nature as a principle of change and rest, and about change as the fulfilment of a capacity as such. The *Phys.* is in this way our first point of reference for the notion of a capacity. However, as we saw in Chapter 1 it is in the *Metaph.*, in Δ .12 and Θ , that Aristotle fully explores the notion of a capacity, also as it is employed in the *Phys.* He is primarily interested in capacities in this work because he is trying to explain what being is. For one way of thinking of being is in terms of capacity (*dunamis*) and activity (*energeia*). So we say that something is such and such both when it has a capacity to be such and such, and also when it is in activity such and such. As we might put it, being in capacity such and such represents a way of being such and such, as does being in activity.

Now for Aristotle such ways of being in capacity and in activity are related—in a way which I tried to articulate in Chapter 1—to the notion of having the capacity to do or suffer something. We primarily (*kuriós*) speak of something as capable or having a capacity when it is capable of doing or suffering something. Aristotle talks of a capacity in these cases as a principle of change in another thing or in oneself *qua* other, or in the passive case as a principle of being changed by another thing or by oneself *qua* other (1046a9–18). This was the notion I referred to as the 'kinetic' notion of a capacity.

It is the kinetic notion which was employed in the *Phys.* and which underlies Aristotle's talk in the *DA* of the soul's capacities. The various life activities that the soul has the capacity to bring about or suffer—nutrition, perception, locomotion, intelligent thinking—are in various ways, and with various qualifications, all forms of change. As we saw in *DA* II.2, to attribute a soul to something implies that it has the

capacity to bring about or suffer changes of one or more of these sorts. And Aristotle makes his conception of a capacity as a *principle* (*arkhê*) of such changes explicit also in *DA* II.2.¹

In what way do the capacities of the soul explain the sorts of changes that living beings engage in? One thing we can say immediately about understanding the soul in terms of capacities is that it helps explain why living beings are able to do and suffer certain things that other beings are unable to do and suffer. So the reason why an animal perceives but a stone does not is that the animal has the capacity to be affected in this way, and the stone does not. But we can go further. Pointing to the capacity to perceive as a cause of perception also helps explain why the animal perceives in certain circumstances but not in others. As Aristotle argues against the Megarians in *Metaph.* *Θ*.3, capacities are not always active, and we do not ascribe capacities only on the basis of their being active. To have vision a person does not have to be currently seeing, and she does not lose her eyesight whenever she is not seeing.² On the other hand, if there were no circumstances in which someone was or would be actively seeing we would surely not say he had the capacity to see. Given that the capacity does not depend on being active all the time but still depends on being active in certain circumstances, the question therefore arises what further factors are required in order to activate the capacity.³ In terms of the *Metaph.*'s interest in ways of being, one could put the question as follows: in what way does being in capacity depend on being in activity, given that the two are distinct? Or in terms of being a capacity for change: in what way does being a capacity for change depend on undergoing actual change, given that the two are distinct?

The answer depends to some extent on the kind of capacity for change we are considering. Aristotle distinguishes between the so-called rational and non-rational capacities which are realized in different ways. As he explains in *Metaph.* *Θ*.2, a non-rational capacity is one which is not based on having a reason (*logos*). Such is fire's ability to make something else hot. A non-rational capacity can, of two opposed outcomes, only bring about one: fire can heat but not also chill. Rational capacities are so-called because they are based on having a reason or rational account (*logos*) of the product, and so require of the agent a rational capacity. Having a rational capacity confers on someone the ability to produce opposite results. So knowing medicine will make you good not just at curing people, but also at making them ill. The explanation is that a rational capacity is based on possessing an account of the outcome but this account will show you how to produce not only this outcome but also its opposite. If, for example, you know how much insulin will improve the condition of a diabetic

¹ Cf. 413a26–7: φαίνεται γὰρ ἐν αὐτοῖς ἔχοντα δύναμιν καὶ ἀρχὴν τοιαύτην . . . ; 413a33–b2: οὐδεμία γὰρ αὐτοῖς ὑπάρχει δύναμις ἄλλη ψυχῆς. τὸ μὲν οὖν ζῆν διὰ τὴν ἀρχὴν ταύτην τοῖς ζῶσι, . . .

² Cf. also *DA* III.2 426a15–26.

³ This is one of key questions for modern philosophers thinking about powers, see for example Molnar (2003) 82–98.

patient, you will also indirectly know how much will be insufficient to aid him and how much it will take to worsen his condition or kill him. Given that a rational capacity can be realized in opposite ways, it appears that something else is needed on top of the capacity to explain why it is exercised in one way rather than another. Aristotle points to the agent's desire or choice (1048a10).

Part of Aristotle's concern with two-way capacities may be that they seem to be oddly contradictory: how can a capacity leading to one kind of activity also lead to exactly the opposite. Recall Socrates' worry in the *Phaedo* that processes of the sort cited as causes by materialist philosophers equally lead to opposite results.⁴ For Socrates this observation disqualified these processes as causes. Aristotle's solution to this kind of worry is that the capacity is not equally for the opposite results. Medicine aims at health and is only accidentally a capacity to produce disease. Of the two opposite results which the capacity enables one to produce there is only one which is the proper exercise of the capacity. We can see at work here a distinction between that which the capacity enables you to do and that which the capacity enables you to do by virtue of being that capacity, where what the capacity is involves reference to its final cause, health in the case of medicine. Compare the difference between a boxer defeating his opponent in the ring and knocking out a passer-by in the street. In the first case he is exercising his capacity for proper pugilistic purposes, in the second the capacity is misused.

Peculiar conditions of realization pertain, then, to rational capacities. However, there is also a range of conditions which they share with non-rational capacities, as Aristotle explains in *Metaph.* *Θ*.5. We might think of these conditions as broadly falling under the rubric of 'opportunities'. First of all, every active capacity requires the presence of a corresponding passive capacity; the fire will only produce heat in the presence of something colder that can be heated up; the doctor will only heal if there is an ailing patient. Conversely, every passive capacity requires the presence of a corresponding active capacity to be activated. We therefore need to be clear about what it means for the active and passive capacities to come together. In some cases we may think that mere physical proximity suffices: so putting your finger in the fire may ensure that it gets burnt. However, in other cases mere spatial proximity, while presupposed, does not seem to suffice. For example, putting the water on the hot stove may not ensure that it boils if this happens at a high enough altitude. Then there are psychological phenomena, such as perceiving and thinking, to which Aristotle wishes to extend his causal model, where causal proximity has to include paying attention. If you are thinking of what's for dinner while driving, you may not be 'causally present' to perceive the truck heading towards you. It may be hard in these cases to specify the relevant notion of proximity in a way that is not circular, that is, in a

⁴ *Phaedo* 96b–97b, with which cf. Sedley (1998).

way which does not involve saying that the agent is related in the right way so as to bring about the relevant effect on the patient.

Second, given the presence of matching active and passive capacities, the circumstances have to be right. Given that a capacity is defined in relation to a change, as a principle of that kind of change, we expect this capacity to produce this change if presented with a suitable patient in suitable circumstances. Some of these circumstances are defeating ones and are in principle indeterminately many. All sorts of things can go wrong to prevent a burning match from igniting the paper. Aristotle sums them up as ‘if nothing external interferes’. Given the indeterminate character of such obstacles it would be senseless to inscribe them into the capacity itself. Aristotle sensibly says that it is not necessary to add this clause to the capacity (1048a16–17). However, there are also enabling circumstances which seem more specific and proper to the capacity in question. Let’s say I can run 100 metres in 12 seconds but only in a tailwind. Is my capacity then for running-100m-in-12-seconds-in-a-tailwind or is it one for running-100m-in-12-seconds and the presence of a tailwind enables me to realize this capacity?⁵ Both options have pros and cons. The direction and strength of the wind are clearly integral factors in determining how fast one can run, which is why these factors are taken into account by the IAAF when measuring records. It may be sensible to inscribe circumstances which seem in this way integral to the performance of the activity to the capacity itself. One might say that the advantage of such a move is to imbue the capacity itself with greater explanatory power since it is now specifically the capacity that explains the presence or an absence of a certain performance. And we can better explain with direct reference to the capacity the truth or falsehood of counterfactuals such as ‘he would have run the 100 metres in 9.4 seconds if it had not been for a headwind of 4 seconds’. Now Aristotle does seem to allow for a range of specifications of the capacity itself, since he says that we should add in our definition or determination of the capacity ‘at certain times or in certain ways or similar qualifications’ (1048a2–3). He also seems to think that the addition of such qualifications to the specification of the capacity will directly or indirectly rule out a range of defeating circumstances.

However, it is clear that this position also has to avoid the danger of making the capacities too specific. How specifically are capacities indexed to particular effects and circumstances? Is my ability to run a 100 metres in 12 seconds given a tailwind the same as my ability to run a 100 metres in 12 seconds given a tailwind of 2 seconds, and is this the same as my ability to do so in tailwind of 2.1 seconds, and so on? It would seem that by making the capacities too specific one may lose the explanatory power of referring

⁵ For a discussion of the parallel difficulties in specifying the content of dispositions, see Bird (2007) 33–4. See also Austin (1990) 230: ‘The only point of which I feel certain is that such verbs as can and know have each an all-in, paradigm use, around which cluster and from which divagate, little by little and along different paths, a whole series of other uses, for many of which, though perhaps not for all, a synonymous expression (“opportunity”, “realize” and so on) can be found.’

to capacities: namely that there is a range of changes that are all explained by a single causal principle, say, my ability to run fast. If we want explanatory and ontological economy—a desideratum for the faculty psychologist—then it is good to avoid the stipulation of too many capacities. But if so we have to leave some of the circumstances of the capacity's realization out of the specification or definition of it.

These reflections in *Metaph. Θ* on how to specify a capacity are of direct relevance to Aristotle's characterization of the psychic capacities in *DA* II.4 onwards. The first thing he says about the various capacities of the soul is whether they are active or passive. So the nutritive capacity is introduced as an active capacity to act on food to make it like oneself, while the perceptual is presented to us as a passive capacity to be acted on by sense-objects. But these capacities are as active or passive immediately related to corresponding passive or active capacities. The nutritive capacity is related to the passive capacity of certain food stuffs to be made into nourishment, the perceptual capacity is related to the corresponding active capacity of the sense-objects to cause perception. There is thus a definitional relationship between the capacities of the soul and corresponding capacities in the environment. (This is not yet to address the question of which, if any, of these capacities hold the definitional priority in these relations, which I shall address in the next chapter.)

It is also to be expected, given the discussion in *Metaph. Θ*, that certain circumstances required for the realization of a capacity are to be included in the account of the capacity. So, for example, Aristotle introduces the need for a suitable medium in his account of the distance senses, say, light in the case of sight. The requirement of actual transparency, light that is, in the medium is not an extraneous factor to the account of the capacity of sight itself; rather being able to see in light is part of what it means to be able to see.

Apart from the constraints already remarked on, there is another stricture on the specification of capacities in the *DA* that ensures that the capacities are not made too specific with relation to particular circumstances of realization. As we have seen, Aristotle seeks to account for the basic capacities that define the soul *as such*, rather than the capacities in their different manifestations in different kinds of living being. In the *PA*, as we saw in Chapter 3, Aristotle argues that those capacities whereby animals differ only by degree can be treated together as one. So it may well be true that the cat's capacity to see is also one to see in rather less light than a human's, but these are variations in vision of degree not of kind. They do not affect vision as such. Compare also Aristotle's discussion in *DA* II.9 of the difference between the sense of smell as it functions in air and in water. Humans smell by inhaling, but this is not an essential feature of smelling since there are animals which smell while not inhaling, aquatic animals, as well as non-aquatic bloodless animals. The key thing as far as defining the sense of smell is concerned is sensitivity to odour. Aristotle's discussion of the vagaries of olfaction serves here to underline what is essential to smell, the existence of a suitable medium from what is circumstantial, whether the medium is water or air or the smelling happens by breathing or not. These may be important differences from the

point of view of the animals concerned, but they are not important to defining smell as such, which is the business of the *DA*. Aristotle's definitional programme in the *DA* dictates, then, specifying the capacities at the highest level of generality available while capturing what is essential to it.

Capacities for Kinds of Change

A capacity is a capacity for change and a specific capacity is a capacity for a specific kind of change. This point is underlined by Aristotle's argument in *Metaph.* *Θ*.7 that the activity (*energeia*) is prior in account (*logos*) to the capacity (*dunamis*). 'For example', he says, 'I mean by "capable of building" "that which can build", and by "capable of seeing" "that which can see"' (1049b14–15). In those cases, like building or seeing, where the activity is a change, it is clear therefore that the change will be prior also in account to the capacity as such. As we saw, other factors, such as time and manner, enter into the account of capacity, but it seems primarily to be the kind of change that the capacity is for which determines the capacity. The other circumstances are, as Aristotle put it, 'added to the definition' (*prosdiorizesthai*).

Because causal capacities, then, are primarily determined by the kind of change they are capacities for, they are also distinguished from each other by the basic distinctions between the different kinds of change. As Aristotle explains in *Phys.* V.1–2 four kinds of change are basic to nature: change in the category of space or place (i.e. locomotion), change in the category of quality (i.e. alteration), change in the category of quantity (i.e. growth and diminution), and change in the category of substance (i.e. generation and corruption). In the *DA* Aristotle relies on these distinctions to set apart the different kinds of change that the soul's capacities are for. He identifies perception and thinking as alterations, that is, as changes of quality,⁶ whereas the locomotive soul is a principle of change in the category of place. The nutritive capacity is involved with changes in both the categories of quantity and substance: if we understand it as producing growth and diminution it causes change in the category of quantity, whereas if we understand it as involved in generation and nutrition it causes change (and rest) in the category of substance. The capacities of the soul thus differ in that they are capacities for categorically different kinds of change.

On this point, Aristotle's view of the soul contrasts with the views of many of his predecessors, as he presents them in Book I of *DA*. So, on the basis of the *Timaeus*, Aristotle portrays Plato as taking the soul to be a principle of motion in the sense of locomotion. The soul on this theory is capable of moving itself spatially and by doing so it also moves the body. Also the atomists understood the ability of the soul to change

⁶ It should be noted that the distinction between different categories of change becomes the basis for a problem for the characterization of perception as an f-change, since Aristotle in *Phys.* VII.3 associates f-changes with substantial changes in contrast to qualitative changes such as perception. I try to address this concern in Chapter 8.

and be changed in terms of the peculiar spatial motivity of the soul's atoms. Without going into the details of Aristotle's several criticisms in *DA I* here, it is easy to see why on general grounds he would be unhappy with theories of the soul which explain the variety of categorically different kinds of change in terms of one kind of change. For as Aristotle explains in *GC*, the categorical distinctness of the various kinds of change is based on the fundamental categorical distinctness of the attributes involved in the change:

When the change from contrary to contrary is in quantity, it is growth and diminution; when it is in place, it is locomotion; when it is in property, i.e. in quality, it is alteration; but when nothing persists of which the resultant is a property (or an accident in any sense of the term), it is coming-to-being, and the converse change is passing-away. (*GC I.5* 319b32–320a3, revised Oxford transl.)

Change divides up in these categories because being does so, and, except by analogy, there are no more fundamental terms in which being and change can be described. Aristotle is then for general reasons of physics and metaphysics opposed to any reduction of the various kind of change to one kind of change. Given that living beings undergo kinds of change that are categorically different, then, it is appropriate to seek principles for those kinds of change that also do not fall into one category.

One of the advantages of postulating capacities as causes of psychological phenomena cited is explanatory economy. A variety of phenomena can be explained by reference to a few basic capacities.⁷ I am arguing in this book that Aristotle seeks to posit as few psychological capacities as possible, those that are sufficient to explain the basic varieties of life behaviour. However, the categorical difference of these behaviours imposes a lower limit on the number of capacities acceptable to Aristotle, if we compare his theory to that of Plato. A capacity to undergo various kinds of spatial motion cannot, for example, explain perception if perception is fundamentally a change in quality; for that we need a capacity to undergo qualitative change.

There are, then, metaphysical constraints on the minimum number of psychological capacities. However, Aristotle's reluctance to reduce the varieties of change to a single kind also relates to his demand that natural explanations be empirically adequate. So in *GC I.2* he chides Plato, who in the *Timaeus* had made substantial and qualitative change depend on the coming together and dissolution of plane triangles:

Lack of experience diminishes our power of taking a comprehensive view of the admitted facts. Hence those who dwell in intimate association with nature and its phenomena are more able to lay down principles such as to admit of a wide and coherent development; while those whom devotion to abstract discussions has rendered unobservant of the facts are too ready to dogmatize on the basis of few observations. The rival treatments of the subject [i.e. Plato's and Democritus' treatments] now before us will serve to illustrate how great is the difference between a scientific and a dialectical method of inquiry. For, whereas the one school argues that there must be atomic

⁷ Cf. Fodor (1983) 26.

magnitudes because otherwise the triangle itself will be more than one, Democritus would appear to have been convinced by arguments appropriate to the subject, i.e. drawn from the science of nature. (316a5–14, revised Oxford transl.)⁸

When forming an adequate theory of nature one needs to look at the full range of relevant natural phenomena and adopt explanatory principles which are geared to explaining these phenomena. Proposing physical principles on the basis of their consistency with some extra-physical theory, like ‘the triangle itself’, is inappropriate: it is no good adopting principles for argumentative reasons which fail to explain what is proper to nature. The capacities of the soul are a case in point: as principles of change we need to posit capacities which are adequate to explaining the full range of life behaviours of ensouled beings.⁹ Also for this reason, it is a mistake to posit reason as the sole capacity of soul for all living beings.

Capacities and Categories of Change

But is Aristotle not wrong about this, even by his own standards of explanation? For it seems that a capacity for one kind of change can often set up changes of attributes in a range of different categories. So the heat of the fire may heat up the air in the balloon, but also thereby make it expand, a quantitative change, and make it move up, a spatial change. Why should the soul not by moving spatially, in principle at least, be able to bring about qualitative changes such as perception, or quantitative ones such as growth? When we look at Aristotle’s own account of locomotion he seems himself committed to certain cross-categorical changes. So when we consider how the soul causes locomotion we find that it involves qualitative changes, perceptions, imaginings, or thoughts which are somehow translated into expansions and contractions in the bodily parts, which in turn produce the movements of the limbs (*MA* 7 701a2–32). That is to say the soul in experiencing together with the body certain kinds of qualitative changes also undergoes with the body other categorically diverse kinds of changes. If, on Aristotle’s own account, the soul as a principle of spatial motion also involves qualitative and quantitative changes, why should Plato not equally insist that the soul when moving around naturally sets up a variety of such changes?

The question forces one to be clearer about how we determine capacities. The answer that will emerge more clearly as we progress is that the capacities of the soul are

⁸ *Αἴτιον δὲ τοῦ ἐπ’ ἑλαττον δύνασθαι τὰ ὁμολογούμενα συννορᾶν ἢ ἀπειρία. Διὸ ὅσοι ἐνκρίκασιν μᾶλλον ἐν τοῖς φυσικοῖς μᾶλλον δύνανται ὑποτίθεσθαι τοιαύτας ἀρχὰς αἱ ἐπὶ πολὺ δύνανται συνείρειν· οἱ δ’ ἐκ τῶν πολλῶν λόγων ἀθεώρητοι τῶν ὑπαρχόντων ὄντες, πρὸς ὀλίγα βλέψαντες, ἀποφαίνονται ῥᾶν. Ὅδοι δ’ ἂν τις καὶ ἐκ τούτων ὅσον διαφέρουσιν οἱ φυσικῶς καὶ λογικῶς σκοποῦντες· περὶ γὰρ τοῦ ἄτομα εἶναι μεγέθη οἱ μὲν φασιν ὅτι τὸ αὐτοτρίγωνον πολλὰ ἔσται, Δημόκριτος δ’ ἂν φανείη οἰκεῖος καὶ φυσικοῖς λόγοις πεπεῖσθαι.*

⁹ Compare also the failure of Empedocles’ view that the soul is composed of bodily elements (*DA* I.5 410a13–26) and is thereby able to recognize what is like those bodily elements: such a theory will only explain the soul’s ability to recognize quantities, not attributes in other categories. The soul would need to be composed rather in such a way that it can be affected by attributes in the full range of categories.

determined and defined by the activities that fulfil them. So if the capacity for locomotion is defined by the activity of the locomotion, and this activity belongs to the category of place, then it seems reasonable to understand the capacity itself as a capacity for change in this category. The point that the capacity fulfils itself through other changes which fall into other categories should not obscure the point since these are not changes that define the capacity as such. Compare, alongside the locomotive capacity, the nutritive capacity. Nutrition is change (and rest) in the category of substance. However, in producing this change the nutritive soul also initiates qualitative and spatial changes, as the food gets heated up (*DA* 416b29) and distributed around the body. Aristotle, however, is explicit that what properly characterizes the nutritive capacity is the end (*telos*), maintaining the substance one is (416b17–19) and, even more so, generating a substance such as oneself (*DA* 416b24–5). There seems reason, then, given this teleological outlook on capacities, to maintain that the capacities of the soul are capacities for change in specific categories that they are for the sake of, while accepting that the execution of those capacities may involve, in a non-defining way, changes falling within other categories.

Could Plato's *Timaeus* not claim similarly that the soul is composed of capacities for change in a variety of categories, which are in various ways realized through the spatial motion of the soul? Without entering into the interpretation of the *Timaeus*, one can see why this would not satisfy Aristotle. For, as Aristotle reads Plato in *DA* I.3, what it is to be a soul is to be a principle that moves by moving itself, and thinking is a particular way of so moving, namely in a circular way according to certain defining ratios. It is not the case then that for Plato thinking is defined as some kind of qualitative change which is realized through certain locomotion; rather it appears that thinking is defined as a certain kind of locomotion. This would violate Aristotle's view of the categorical distinctness between the kinds of change the soul is responsible for.

However, the categorical diversity of the changes that define the soul's capacities gives rise to a question about the soul's unity. If you are Plato's *Timaeus*, you can define the soul in terms of a single kind of change, spatial motion. The soul thereby has a categorical unity. For Aristotle, on the other hand, given that the soul is composed of capacities for change in different categories, one may wonder what unifies the different kinds of capacity. There is of course no problem in saying that the same thing, the same substance, say, may have properties that belong to different categories. A house, after all, has a colour, a size, and a location. In these cases the different attributes are unified by belonging to the same substance, the house. However, the case of the soul may seem to be different. The soul itself is supposed to be substance, but we are now saying that it is itself composed of capacities for change which seem not all at least to belong to the same categories. That is to say, categorically different items enter into the essence of the soul. Does the soul not end up as a categorical hodgepodge of entities?

One way of blocking this move is to point out that capacities for change in different categories need not themselves be seen as belonging to those categories. So while the capacities for perception and locomotion are capacities for change in the categories of

quality and place, the capacities themselves do not *as capacities* belong to those categories. Rather they belong, as shown by *Metaph.* 4.15, to the category of relation. Capacities which are active are relative to their passive counterparts, and vice versa. Meanwhile capacities which have proper objects like knowledge or sight are relative to these. Similarly, in *Cat.* 7 Aristotle categorizes knowledge and perception as relatives on the basis of their relationship to their objects. So knowledge is *of* the knowable, perception is *of* the perceptible. Since the capacity for knowledge or perception is a capacity for being in either of these states, we may reasonably say that these capacities too are relative to the proper objects of the corresponding states. This seems to be a point that also applies to the other capacities of the soul, which, as we shall see in the next chapter, are defined in terms of their proper objects. There seem reasons then for thinking both that capacities in general belong to the category of relation, and that the specific capacities that make up the soul belong to the category of relation by virtue of the sort of activities that they are capacities for. But if so, the claim that the soul is made up of capacities does not itself introduce categorical diversity in the soul.

However, if one insists on categorizing capacities as relations, another problem seems to arise: should the soul as the substance of living bodies (*DA* 415b13–14) not itself be composed of entities that belong to the category of substance, not other categories, and perhaps particularly not the category of relation? In *Cat.* 7 Aristotle tends to maintain that no substance either primary or secondary can be spoken of as relative, and one may think that this point should therefore apply also to the essence that makes the substance what it is. This is a complex matter involving fundamental issues of logic and metaphysics to do with essence, substance, and definition, which I cannot hope to address here. However, the way I suggested taking the claim that the capacities of the soul constituted the essence of living beings was particularly as *differentiae* in the definition of the major kinds of living being. Aristotle is explicit in the *Top.* that *differentiae* do not themselves signify ‘what it is’, but are rather a kind of quality,¹⁰ where the contrast suggests that he is taking ‘what it is’ to refer to the category of substance. One may take it then that the capacities of the soul enter into the definition of the various kinds of living being as the kind of quality that distinguishes them from other living beings. To revert to the example of *DA* II.2: animal is a living being with the capacity to perceive. Here the perceptual capacity is the *differentia* of animals, and while it contributes, as the *differentia*, to defining the substance, animal, it should not itself be taken as a substance term.¹¹

If this sketch of an answer is accepted, the next question evidently is whether the description of the *differentia* as a kind of quality is compatible with taking the

¹⁰ *Top.* IV.2 122b16–17: οὐδεμία γὰρ διαφορὰ σημαίνει τί ἐστιν ἀλλὰ μάλλον ποιόν τι, καθάπερ τὸ πρὸς τὸ καὶ τὸ δίπουν.

¹¹ We could say that the *differentia* is not itself substance but a quality in the substance, using the expression of *Phys.* V.2 226a27–9: λέγω δὲ τὸ ποιόν οὐ τὸ ἐν τῇ οὐσίᾳ (καὶ γὰρ ἡ διαφορὰ ποιότης) ἀλλὰ τὸ παθητικόν.

differentiating capacity as a relative. Aristotle's examples of differentiae in *APo* II.13 and *PA* I.3 (two-footed tame or sanguineous animal) suggests that the *Top.*'s talk of a 'kind of quality' should not be taken in a narrow sense to mean quality in contrast to quantity ('two-footed') or other non-substantial attributes, but rather ways of being qualified in a broader sense. *Cat.* 8 also suggests such a wider notion of 'quality' which includes relatives. Indeed, here Aristotle suggests that relatives and other categories need not be seen as mutually exclusive: so knowledge can be taken both as a relative and as a condition.¹² Identifying capacities as relatives seems not necessarily to rule out describing them as qualities in such contexts where their role as differentiae requires us to think of them in this way.¹³

Active and Passive Capacities

Capacities can, then, be distinguished in relation to the different categories of change that they are capacities for. They are also fundamentally distinguished by being active or passive. An active capacity is a cause of change in something else or oneself *qua* other, a passive capacity is cause of oneself being changed by something else or oneself *qua* other. One may understand the notion of cause here in the first instance in terms of efficient causation: an active capacity is able to initiate or activate a change in something else, a passive capacity is able to be activated by something else. So the hot has the ability to initiate heating in what is cold. However, we should recall that the efficient cause here is actively able to bring about the change in the patient because it already has the form in activity which the patient has in capacity. The degree to which the form is manifested by the possession of a capacity is then part of the story of whether the capacity qualifies as active or passive.

While the distinction between active and passive capacities is thus reasonably clear in basic cases like the hot and the cold, complications, as we shall see in the following chapters, arise when we consider the psychological capacities. Aristotle contrasts (*DA* 416b33–5) the perceptual capacity as passive with nutritive capacity as active. But neither diagnosis is at first glance obvious. For we tend to think that we are nourished or fattened by food, while there is good reason to think that we are active when we perceive because of the various ways in which we interpret perceptual input.

Aristotle is well aware that the ways in which we tend to use active and passive verbs to describe changes do not always correspond with the underlying causal realities. So, to use an example from *SE* 22 178a14–22, 'I see' may have an active verb form, but causally vision is still passive change in me. To point to the active aspect of seeing is then not primarily a question of grammar. More to the point, Aristotle repeatedly himself calls vision, like thinking and imagining, a kind of discerning (*krinein*), which

¹² *Cat.* 11a20–39; cf. also 10a32–b4 where runners and boxers are said to be qualified in virtue of natural capacities.

¹³ This section has benefitted much from the criticism of Klaus Corcilius.

may be taken to point to an active role for the perceiver. There is no need, however, to see any inconsistency between the language of discerning and the passive causal language of suffering.¹⁴ First, the role of the discerning can be understood in terms of the sense capacity's being affected as a mean in relation to opposite sensory qualities. The mean discriminates between different sensory inputs insofar as it responds differentially to sensory inputs falling on either side of the sensory mean. To use an appropriately judicial analogy,¹⁵ a pair of scales which tip down on one or the other side may be said to discriminate between the weights in the scales, but causally speaking the scales are still passive in relation to the weights. Second, 'discerning' does not mean interpreting the sensory input in a way that imports content beyond that supplied by the external cause. Perception remains the reception of the sensible form from the external object without its matter (*DA* II.12), and is successful insofar as the form received is that of the external object. Certainly, there are ways in which the sensory mean may be altered to ensure proper receptivity: Aristotle's is aware that our eyes may sometimes need adjustment, for example, if we leave a dark room to go outdoors on a sunny day our eyes will at first, but not for long, be overwhelmed by the strength of the affection.¹⁶ But this is more a matter of adjusting for distortion in perceptual circumstances so that we can respond appropriately to the external object than it is a matter of our altering or adding to the information provided by this object.

These are points that seem to reaffirm that perception is a passive change, in face of some of its apparently active features. However, without compromising this basic point we can also see a way in which the efficient causal analysis of perception to some extent accommodates the appearance of perception as something we do. We may take as our model Aristotle's account of the relative contributions of the male and female powers in generation.¹⁷ While the male counts as active in relation to the female, it is clear that the female nonetheless provides matter which to a high degree manifests the form. Indeed, the passivity of the female is compatible with thinking of her contribution also in terms of distinctive changes (*kinêseis*). What nonetheless justifies the description of the male as active and the female as passive is the *relative* degrees to which they manifest the form. A similar case can be made for the perceptual capacity: it is already to a high degree informed by the perceptual form, indeed Aristotle is willing to refer to the state of the perceptual capacity even before the action of the sense-object as 'perceiving' (*aisthanesthai*). In this way, the sensory capacity participates to high degree in the activity of perception, even if it is not responsible for *triggering* perception. This is a matter which will become clearer as we analyse the causal roles of the various capacities in the following chapters.

¹⁴ I here summarize my argument in Johansen (2002).

¹⁵ As argued by Ebert (1981), the core notion of *krinein*, derived from the law-court, is that of discriminating between two options; the broader notion of 'judging' comes later than Aristotle.

¹⁶ Cf. *GA* 780a6–13; *Insom.* 459b6–23.

¹⁷ For a survey of the uses of *dunamis* in reproduction, see Peck (1942) lii.

Capacities and Natures

In *Phys.* II.1 Aristotle defines nature as an *inner* principle of change and rest. The *Phys.*'s conception of nature serves to offset natural beings from other beings. All beings that are composed of both form and matter undergo changes. But natural beings determine some of their own changes, for they have within themselves a principle (*arkhê*) of change and rest. Having an internal principle of change is what sets them apart from composite beings such as artefacts, which require an external principle in order to change. Nature as a principle of change is said in four ways, as formal, material, efficient and final causes. Unlike artefacts, natural beings have the principle of change within them in all of these four senses.

Already at the beginning of the *DA*, Aristotle said that 'knowledge of the soul seems to contribute greatly to all truth but most of all the truth in relation to nature: for the soul is like a principle (*arkhê*) of animals' (402a4–7).¹⁸ The full thought seemed to be that since nature is a principle of change and animal change is natural change, and since, moreover, the soul is a principle of animal change, understanding the soul means understanding a central case of nature. In *DA* II.2 the soul is said to be a cause in three of the four senses—formal, final, and efficient—with the body providing the material cause. And Aristotle underlines that the soul is an *internal* principle of change, when he says that the soul is not the formal cause, here formula (*logos*), of *such* a body, that is the body of an artefact, but rather of a *natural* body, which, he says, is a body 'having a principle (*arkhê*) of change and rest *in itself*' (412b15–17). Soon afterwards, he says of plants that they all seem to live, 'for they clearly have *within themselves* (*en hautois*) a capacity and principle (*dunamin kai arkhên*) of such a kind, through which they take growth and diminution in opposite places' (413a25–7).¹⁹ The capacities of the soul are, then, not just principles of change and rest but also inner principles. It seems, therefore, that they represent the nature of living beings in the *Phys.*'s sense of 'nature'.

However, something Aristotle says in *Metaph.* Θ.8 gives pause for thought:

Since 'prior' as defined is said in many ways, it is clear that activity is prior to capacity. I mean prior not only to the capacity that was defined as a principle of change in another thing or *qua* another but also generally of every principle of change or rest. For nature too falls in the same genus as [the] capacity (*dunamis*): for it is a principle of change, not in another but in it *qua* it (*ἐν αὐτῷ ἢ αὐτό*). Actuality is, then, prior to all such [*dunamis*] in formula and in substance. (1049b4–11)

¹⁸ δοκεῖ δὲ καὶ πρὸς ἀλήθειαν ἅπασαν ἡ γνώσις αὐτῆς [sc. τῆς ψυχῆς] μεγάλη συμβάλλεσθαι, μάλιστα δὲ πρὸς τὴν φύσιν· ἔστι γὰρ οἶον ἀρχὴ τῶν ζώων. We should note the qualified 'such as' (*hoion*) which allows for a variety of possible interpretations, see (Lennox 2010). One suggestion championed by Lennox is that the qualification allows for the difficult case of the intellect (*nous*). In Johansen (2007) I proposed that the 'such as' here served to put epistemic distance to the claim: we do not yet know what it means for the soul to be a principle, so the vagueness is appropriate.

¹⁹ φαίνεται γὰρ ἐν αὐτοῖς ἔχοντα δύναμιν καὶ ἀρχὴν τοιαύτην, δι' ἣς αὐξήσιν τε καὶ φθίσιν λαμβάνουσι κατὰ τοὺς ἐναντίους τρόπους.

At first sight, this passage appears to be saying that nature is not a capacity but falls within the same wider class as capacity. The difference would be that while capacities are capacities for change in another thing or itself *qua* other, nature is a principle of change in the thing itself *qua* it. On this reading, then, while natures are related to capacities by sharing a genus, they are not themselves capacities. If so, natures are not themselves capacities, and the inference fails whereby we went from saying that the soul was composed of capacities, and those capacities were principles of change in living beings, to saying that the soul thereby was the nature of those living beings. This presents a problem for the sort of assimilation of Aristotle's psychology to his physics which I sketched above.

One simple solution might appear to be to reinterpret the text. So Aristotle may be taken to say not that nature is not a *dunamis* but belongs to the same genus as *dunamis*, but rather that nature is another species of the genus *dunamis* than the one we have defined so far. Notice the definite article at 1049b9 which seems to pick up on the contrast between *dunamis* in general and the defined *dunamis* in b6. If so, Aristotle's reference in *DA* to the capacities of the soul as *dunameis* might still be consistent with thinking of them as natures. This expedient seems, however, to be undermined by Aristotle's closing words in *Metaph.* *Θ*.8: 'It is clear that actuality is prior to capacity and every principle of change.'²⁰ He speaks here as if capacity, in general, falls under a wider class of principles of change.

Let us, then, take it that Aristotle does mean to distinguish natures from capacities, while maintaining that they are both principles of change. Can we still maintain that the capacities for change that define the soul in some way also constitute its nature? Yes, I would suggest, since it remains possible that the same principles of change that are *dunameis* from one point of view count as natures from another. Both nature and *dunamis*, as we saw, are principles of change. The distinguishing feature of nature is that it is a principle of change in the thing *qua* itself, while a capacity is a principle of change in another thing or itself *qua* another. But it is possible that the same capacity which changes another thing also thereby acts as a principle of change in the thing that has the capacity *qua* itself, and in that respect the principle is active as the nature of that thing. For example, we may think that in nutrition the nutritive capacity acts as an active capacity on the food, but in so acting the capacity also realizes its role as the nature of the living being that has the principle. So in acting on the food the nutritive capacity also maintains the living being to which it essentially belongs, and so represents the exercise of a principle of change and rest in the thing itself. Similarly, we might say that the perceptual capacity acts as passive capacity in perceiving but in so acting also realizes its role in the nature of the animal in making the animal change in itself *qua* the sort of

²⁰ ὅτι μὲν οὖν πρότερον ἢ ἐνέργεια καὶ δυνάμειος καὶ πάσης ἀρχῆς μεταβλητικῆς, φανερόν. Alexander's citation omits καὶ before πάσης which would allow us to take the second καὶ as epexegetic, but πάσης on its own might still seem to weigh in favour of seeing a difference in scope between δυνάμειος and ἀρχὴ μεταβλητικῆς: otherwise why not write πάσης δυνάμειος?

thing an animal is. Whether, then, one calls such principles of change capacities or natures depends on what one sees the principle as causing or explaining: if one focuses on the principle's relationship to the object (the sense-object, the food) it counts as a capacity (active or passive); if one considers the principle's relationship to the bearer of the capacity, what it does to the bearer or enables the bearer to do, it counts as a nature. From this point of view Aristotle's description of the nutritive soul as both capacity and *arkhê* (413a26–7) may look less like a pleonasm now than an indication that there is a further aspect to the capacity that appears once we look at it as an *arkhê* in the living beings that have it: namely, the aspect of being their nature.²¹

There is, however, another problem with the suggestion that nature could work as a principle of change in oneself. The problem lies with the cogency of the idea of a cause of change in oneself. For Aristotle insists elsewhere that change requires a difference between agent and patient.

Obviously, then, in a sense the capacity of acting and of being acted on is one (for a thing may be 'capable' either because it can itself be acted on or because something else can be acted on by it), but in a sense the capacities are different. For the one is in the thing acted on; it is because it contains a certain principle, and because even the matter is a principle, that the thing acted on is acted on, and one thing by one, another by another; for that which is oily can be burnt, and that which yields in a particular way can be crushed; and similarly in all other cases. But the other capacity is in the agent, e.g. heat and the art of building are present, one in that which can produce heat and the other in the man who can build. And so, in so far as a thing shares the same nature (*sumpephuken*) it cannot be acted on by itself; for it is one and not two different things. (*Metaph.* Θ.1 1046a19–29, transl. after revised Oxford)²²

One might think that by explaining the claim that a thing cannot act on itself in terms of the agent and patient having the same nature (*sumpephuken*), Aristotle is implicitly rejecting the idea that something by virtue of its nature could move itself. For if it moves itself by virtue of its nature then cause and effect will share the same nature. That is why this passage seems to make deep trouble for the idea of natural beings as self-movers. However, there are ways of taking *sumpephuken* which avoid this implication. The simplest is to say that the scope of *sumpephuken* are those attributes Aristotle has just been talking about, say hot and cold. You will not heat yourself up by virtue of just being hot, you need to have a contrast within yourself, say being hot in one part and cold in another. Taken in this way, the passage says nothing about

²¹ I have not addressed here the weaker claim that the capacities of the soul are natural in the sense of 'according to nature' (see *Phys.* II.1) both because the *DA* makes us expect the stronger claim that the capacities are natures and because the weaker claim seems uninterestingly true whatever we say about *Metaph.* Θ.8.

²² φανερόν οὖν ὅτι ἐστι μὲν ὡς μία δύναμις τοῦ ποιεῖν καὶ πάσχειν (δυνατὸν γὰρ ἐστὶ καὶ τῷ ἔχειν αὐτὸ δύναμιν τοῦ παθεῖν καὶ τῷ ἄλλο ὑπ' αὐτοῦ), ἔστι δὲ ὡς ἄλλη. ἡ μὲν γὰρ ἐν τῷ πάσχοντι (διὰ γὰρ τὸ ἔχειν τινὰ ἀρχήν, καὶ εἶναι καὶ τὴν ὕλην ἀρχήν τινα, πάσχει τὸ πάσχον, καὶ ἄλλο ὑπ' ἄλλου· τὸ λιπαρόν μὲν γὰρ καυστόν τὸ δ' ὑπεῖκον ὡδὶ θλαστόν, ὁμοίως δὲ καὶ ἐπὶ τῶν ἄλλων), ἡ δ' ἐν τῷ ποιούντι, οἷον τὸ θερμὸν καὶ ἡ οἰκοδομική, ἡ μὲν ἐν τῷ θερμαντικῷ ἡ δ' ἐν τῷ οἰκοδομικῷ· διὸ ἡ συμπεφύκεν, οὐθὲν πάσχει αὐτὸ ὑφ' ἑαυτοῦ· ἐν γὰρ καὶ οὐκ ἄλλο.

whether something can change itself by virtue of its nature, as long as changing oneself by virtue of one's nature is compatible with there being a contrast between an agent and patient within oneself. But is it? We may think that in those cases where something changes itself by virtue of its nature, the agent and patient must be sharing the same nature and moreover one must be changing the other by virtue of sharing the same nature. For otherwise what is the sense of it changing itself *qua* it rather than *qua* other?

However, while it seems right to say that the agent and patient in natural change have to belong to the same thing *qua* the sort of thing it is, it is still not clear that the agent and the patient have to pick out the same aspect of that thing. So when we talk of the soul as a cause in relation to the body of a living being, we can understand the soul as the formal cause, and so as appropriately active, and the body as the material cause and so as suitably passive.²³ The form and the matter are different aspects of the same living being but they both belong to it by virtue of the essence of that living thing.²⁴ The change whereby the soul brings about changes in the body counts as a natural change, then, because the soul when acting on the body acts on something that is the same as itself in that they both belong to the same living being by virtue of its essence. But it is also a case of the souls' capacities acting on something other than themselves insofar as the body as matter is different from the form.

This answer disambiguates the awkward *sumpephuken* as follows. While soul and body may essentially belong to the same living being, and in that sense have the same nature, you would not give the same definition of them as soul and as body. Rather they stand in the relationship of form to matter, and so according to Aristotle they are appropriately seen as related also as active to passive.²⁵ Moreover, Aristotle says in *Phys.* II.1 that the composite, form and matter, is by nature, but also that it is not nature, a claim that contrasts with form and matter each being nature.²⁶ Strictly speaking, then, it would not be right to say that form and matter share the same nature, in the sense that they *are* the same nature, though they may jointly constitute the nature of the composite thing. When we say, then, that nature is a principle of change in the thing itself *qua* it, we mean that insofar as the thing is what it is, it has that nature, but not that the thing that *has* the principle *is* the nature. We can say therefore of the composite, say, man, that by its nature, it has a principle of change within itself, without implying that this particular nature somehow acts on itself. Rather the nature causes a change in the man in some other respect. The patient here may in turn be

²³ Cf. *GC* I.7 324b18: the matter *qua* matter is passive.

²⁴ In the case of the body 'in virtue of its essence' may mean following from the essence rather than being part of it.

²⁵ So Aristotle asks of sperm in *GA* I.18 724b6–7 in which class we should place sperm: 'as matter and suffering or as a certain form and as acting or even as both' (*πότερον ὡς ὕλην καὶ πάσχον ἢ ὡς εἶδος τι καὶ ποιούν, ἢ καὶ ἄμφω*)

²⁶ *Phys.* II.1 193a36–b6: τὸ γὰρ δυνάμει σὰρξ ἢ ὁστοῦν οὐτ' ἔχει πῶς τὴν ἑαυτοῦ φύσιν, πρὶν ἂν λάβῃ τὸ εἶδος τὸ κατὰ τὸν λόγον, ᾧ ὀριζόμενοι λέγομεν τί ἐστι σὰρξ ἢ ὁστοῦν, οὕτε φύσει ἐστίν. ὥστε ἄλλον τρόπον ἢ φύσει ἂν εἴη τῶν ἐχόντων ἐν αὐτοῖς κινήσεως ἀρχὴν ἢ μορφὴν καὶ τὸ εἶδος, οὐ χωριστὸν ὄν ἀλλ' ἢ κατὰ τὸν λόγον. (τὸ δ' ἐκ τούτων φύσις μὲν οὐκ ἔστιν, φύσει δέ, οἷον ἀνθρωπος.)

another nature, such as the body, which as matter is such as to be acted on by the form. The claim that nothing changes itself insofar as it is *sumpephuken* with itself is then compatible with the claim that natural beings change themselves by acting with respect to one aspect of their nature on another aspect of their nature.

The *Virtus Dormitiva* Objection

One worry looming over the postulation of capacities is the objection associated with the reference in Molière to the *virtus dormitiva* of opium: to explain why opium puts you to sleep in terms of its sleep-inducing power is simply to re-describe the effect as a cause with no added information. Aristotle's talk of powers would be open to this charge of vacuity if he simply sought to explain the activities of living beings *qua* ensouled by referring to capacities in a way which said no more than that they were capacities to engage in those activities.

It is customary in modern philosophy to think that powers are grounded in properties that can be described independently of those powers.²⁷ So the power of a key to open a door might be said to be grounded in a certain spatial arrangement of the key's matter, corresponding to a certain arrangement of the lock's matter. That these are properties that can be described independently of the powers gives them in some respects explanatory priority over the powers. This independence also affords an answer to the Molière objection: to explain why opium induces sleep it is not enough to refer to its sleep-inducing power, one must explain the independent properties that this power is grounded in, say in this case, its molecular structure.

Now one might think that Aristotle in virtue of his theory of the four causes has the same facility by which to avoid explanatory vacuity. So, for example, the material properties of a power might be thought to provide the independent ground for the ascription of a power. But to this one may object that the material properties for Aristotle are generally neither descriptively independent of, nor explanatorily prior to, the other causes, and so offer no independent grounding base for powers. Nor can the efficient causes generally or without qualification be said to be explanatorily prior to the formal and final causes.²⁸ Aristotle believes generally that formal and final causes are explanatorily prior in nature, so if his powers fail to be explanatorily vacuous it is not because they are grounded in material or efficient causes which are descriptively or explanatorily independent.

In fact neither explanatory priority nor descriptive independence is needed to answer the Molière objection; rather what is required is that the causes should be genuinely explanatory. As we shall see, Aristotle's four causes offer explanatory variety

²⁷ For discussion see Molnar (2003) 126–7.

²⁸ I emphasize 'generally' since there are cases where the efficient or material cause (e.g. dreams or eye-colour) enjoys explanatory priority. For discussion of the relationship between material, efficient, and formal/final causes, see Bolton (1997)

in such a way that they, individually and collectively, provide information that goes beyond what Molière's doctor provided when he referred to the sleep-inducing power of opium. Each of the four causes offers a particular perspective on what is to be explained. The threat of explanatory vacuity is therefore countered by the four causes.

Now this point may seem least obvious in the case of the formal cause. A cursory reading of the *Phys.* might give the impression that Aristotle favours *virtus dormitiva* style explanation. So he says that the best way in general of expressing the causation of a house is to say that the house-builder made the house. Here it is the house-builder insofar as he possesses the form of a house who most strictly speaking is the cause. This kind of causal account seems particularly well-suited to bring out why the outcome was a house, rather than say a bridge, and what it was about the cause that enabled it to bring about this outcome, namely that it already possessed the form of a house, in the manner in which house-builders possess the form, namely by having it in their minds. Being told that the cause was a house-builder also tells us that there was a *per se* cause of the house, and so the outcome was not accidental, as it would be, for example, if it were the result of a storm blowing building materials about in such a way that they landed to form a house. There are ways, then, in which even the minimal formal account expressed by saying that the house-builder built the house is not vacuous. However, it is important to note that this minimal formal account is just the starting point for a full formal account. For if we consider the form of house in virtue of which the house-builder built it, it is clear that this, like an architect's drawing, will turn out to be a highly complex structural specification of what constitutes a house. It is this account that explains why a house has to be built in a certain way, with a certain structure that ensures its durability and functionality for the inhabitants.²⁹ You would have to study architecture for a long time to grasp and articulate just how this works. Formal causal accounts involve a high level of detailed and complex information about what constitutes a certain thing. In the case of living beings, we would today naturally think of the knowledge possessed of a species by a biologist, down to the detail of its genetic map.

Now something comparable is true of the formal causal accounts of the life processes in the *DA*. There is a surface formal account which while informative is much less so than the full formal account. Take two examples, nutrition and vision. The nutritive capacity, *qua* nutritive, is the power to preserve the living body as a certain kind of substance, so the nutritive capacity of a dog is the capacity to maintaining the body of a dog as such. Now this makes the nutritive capacity roughly similar to the case of the house-builder, indeed Aristotle himself makes the analogy in *DA* II.4. It is a formal

²⁹ Even if a critic countered by saying that the full formal account of the cause is simply reproducing a full formal account of the outcome and in that sense the formal account of the cause still says no more than the description of a certain outcome, it would still not be true to say that the formal causal account is no more informative than a description of the product since account of the cause also implies a certain process of production which is not a feature of the finished house as such.

account of nutrition which the critic might say is skirting on a Molière explanation, since it explains nutrition, the maintenance of the living being, by reference to a capacity to maintain that particular living being. However, this is only the beginning of the formal account: you would now say what the living being in question is, which its constitutive parts are (cf. the structure of the house), what the stages in the production of nutriment are (corresponding to the stages in the production of a house). Grasping the formal account of nutrition requires then a full recipe, as it were, for the production of a living being, corresponding to the art of architecture in the case of the house.

Let's look also at the formal cause of vision. Minimally, the visual capacity can be described as the capacity to perceive colours, the proper object of sight. We might think this tantamount to a Molière explanation, if we take vision simply as the perception of colour. However, when we start looking at colour, as does Aristotle in *DA* II.5, as a condition of the transparent as such, and specific colours as various ratios of dark and light in bounded transparent bodies, as in *Sens.* 3, it becomes clear that the formal account is much richer and more informative.

One index of the formal account's informativeness is the way in which it puts Aristotle in conflict with competing accounts of vision such as those of Democritus and Empedocles. Neither philosopher would disagree with Aristotle that vision is the perception of colour. However, Aristotle's understanding of the role of transparency in vision sharply distinguishes his account of what vision is from the others. Empedocles took vision to be a matter of receiving a stream of particles from the sense-object through passages in the eye, while for Democritus seeing occurred when a film of atoms was imprinted on the air around the eye and the imprint reflected on the surface of the eye. Now for Aristotle colour is a state of the transparent in a bounded body and has the potential to act on what is actually transparent so as to make it coloured too. Since the capacity of sight is a passive capacity to be acted on by sight, vision too requires transparency in the eye and the eye works in vision by virtue of its transparency. For Aristotle this point serves to show that both Empedocles and Democritus are wrong: not only do these accounts make no reference to transparency as the condition of receptivity to colour, they actually exclude transparency by referring to vision as a matter of particles travelling through the eye or reflections on the surface of the eye. Once we go one step further and see just what the formal account of vision involves, particularly the role of transparency, we can affirm its informativeness by the range of theoretical options excluded by it.

Another sign of the informativeness of the formal causes is the manner in which they have specific implications for the matter. It is a subject I shall return to in Chapter 8, so for now I shall just sketch what I take to be Aristotle's position. He thinks that it is characteristic of those forms that the natural philosopher studies and the way he or she studies them that they work also as the final causes. So in *DA* I.1 he contrasts the forms as studied by the natural philosopher as 'that for the sake of which' with the forms as attended to by the mathematician. The natural philosopher's form is analogous with that of a house described as 'providing shelter', the final cause of the building materials

(403b6–7). Now because the form works as a final cause in relation to the matter, we can say that the form necessitates that the matter be of a certain sort. The necessity in question is the one commonly referred to as ‘hypothetical necessity’. In the case of a house, providing shelter requires the building materials to be of a specific sort (bricks, timber, mortar, rather than butter, feathers, and water, say); in the case of psychological affections, the final/formal cause, desire for retribution, requires that the body undergo a certain affection, namely, boiling of the blood around the heart. The fact that the form has very specific implications for the matter shows how informative the right specification of the formal cause is, at least in the sorts of natural cases we are considering in Aristotle’s psychology.

Ultimately, the answer to the Molière objection, then, lies in understanding the capacities of the soul correctly, as final, formal, and efficient causes, and in seeing how these causes provide quite specific and determinate information about how psychological phenomena take place. It is the job of the next chapters to look in more detail at just how the capacities explain our life behaviours in these three ways.

The Priority of the Objects over the Capacities of the Soul

In the last chapter it emerged that the capacities were principles of change. It also became apparent that, in order to comprehend any particular kind of capacity, we had to understand the kind of *change* the capacity was a principle of. Capacities were distinguished according to whether they were capacities for active or passive changes, and for substantial, qualitative, quantitative, or spatial changes. We could be seen here to be tracking Aristotle's reasoning in *DA* I.1, recalled in *DA* II.4, when he suggested that before we understood the capacities of the soul, we had to inquire into their activities. But the next step in this line of reasoning, according to *DA* II.4, is to say that even before the activities we need to consider their 'objects'. It is to this stage of Aristotle's account of the capacities I now turn.

Like Plato, Aristotle thinks that we need to understand what capacities are *concerned with*, their 'objects', before we can understand the capacities themselves. It is a principle that I shall refer to as 'the priority of the objects'. The aim of this chapter is to give a general account of the priority of the objects. But I shall focus on the case of nutrition, for several reasons. First of all, it is a capacity that is often neglected in this context in favour of perception. This is a problem because the way 'the priority of the objects' is often taken to apply to perception does not generalize to nutrition. Without understanding how the priority of objects works in the case of nutrition we cannot hope to get an adequate general understanding of the principle. Indeed, one might expect nutrition to provide a particularly good example of the priority of the objects, since Aristotle articulates the principle in the chapter in the *DA* on nutrition, II.4.

At the beginning of *DA* II.4 Aristotle sets out how to determine the capacities of the soul:

T1 It is necessary for him who intends to make an inquiry into these matters to grasp what each of them is, and then to inquire into their consequent attributes and the others. But if it is necessary to state what each of them is, for example what the capacity for knowledgeable thinking (*noêtikon*) is or the perceptual capacity or the nutritive, still before that we need to say what knowledgeable thinking is and what perceiving is. For the activities (*energeia*) and actions are prior in account (*kata ton logon*) to the capacities (*dunameis*). But if this is so, and [if] still before these we need to have understood the corresponding objects (*ta antikeimena*), then it would for

the same reason be necessary first to determine about these [what they are], for example about nutriment and sense-object and intelligible object. (415a14–22)

Aristotle's conception of a capacity is developed in extension of Plato's. In *Republic* V Socrates proposed that a capacity (*dunamis*) should be determined as follows:

T2 Regarding a capacity I consider only that thing over against which it is (*eph' hōi estī*) and that which it produces (*ho apergazetai*), and in this way I have called each of them a capacity, and the capacity which is arranged over against the same thing and produces the same thing I call the same, while that which is arranged over against another thing and produces another thing I call another capacity. (477c9–d5)

Socrates here proposes two criteria for distinguishing capacities. In principle, the two criteria are distinct: two capacities might be set over the same thing but produce different things or produce the same thing while being set over different ones. But Socrates treats them in tandem, believing it seems at least in the case of knowledge and belief that the capacities will, if different, be different on both scores.¹

Aristotle's understanding of *dunamis* is inspired by Socrates' account. Like Socrates, he thinks that in order to determine what a *dunamis* is we need to understand what it is about. It may look as if Aristotle is only using one notion, that of the *antikeimenon*, where Socrates had used two. But the term is meant to cover, I shall suggest, both the terms Socrates used: 'the thing over against which it is (*eph' hōi estī*)' and 'that which it produces (*ho apergazetai*)'. Aristotle's *antikeimenon* is sometimes translated 'object', and I shall mostly stick to this. However, a more literal translation would be 'opposite', which may include the sense of 'corresponding'. The best introduction to the term is *Cat.* 10, where Aristotle lists four different notions of the verb *antikeimai*, here usually translated as 'to be opposed'. Things can be opposed as relatives, as contraries, as privation and possession, or as affirmation and negation. The use of *antikeimon* to indicate a contrary is used also in the *DA*,² but the notion that is relevant to us in *DA* II.4 seems to be that of a relative. For Aristotle makes it clear that he has in mind by *antikeimenon* that which is perceived or known or similar, and in *Cat.* 10 he uses exactly the relation of the object of knowledge as an example of what is opposed in the relative sense, opposed in this case to knowledge.

Understanding the *antikeimenon* as a relative of the activity helps explain why Aristotle thinks that there is a need to refer to it when defining the activity. Perception or knowledge are relatives in that they are always perception or knowledge of something, so it makes sense that we need to specify what they are perception or knowledge

¹ Cf. Fine (2003) 71–5; Denyer (1993) 56: 'What about the case where the power or powers in question have the same object and different products, or the same product and different objects? What, for example, about the power of making liquid water by heating ice, and the power of making liquid water by cooling steam? Here the objects are different: ice and steam. But the product is the same: liquid water. In such cases, would we have two powers or only one? As he himself formulates it, Plato's criterion for identifying and differentiating powers says nothing about such cases.'

² 416a34.

of, if we are to understand what kind of perception or knowledge they are.³ The point again is familiar from the *Republic*, T2. It is clear, however, that there are informative and uninformative ways of specifying the objects of perception or knowledge. As Aristotle points out in *Metaph.* Δ.15:

That which is measurable or knowable or thinkable is called relative because something else is related to it. For the thinkable implies that there is thought of it, but the thought is not relative to that of which it is the thought; for we should then have to say the same thing twice. Similarly, sight is the sight of something, not of that of which it is the sight (though of course it is true to say this); in fact it is relative to colour or to something else of the sort. (1021a29–b2)

To say that sight is of that of which there is sight is to say the same thing twice over, so adding no new information in the specification of the object. To say, in contrast, that sight is of colour is genuinely informative. We are given real information about what kind of thing sight is in its nature related to.

Recall here that Aristotle is discussing relations in which the *relata* are related *per se* (*kath' hauto*) to each other. While we have therefore been given reason to think that the capacities of the soul stand in a definitional relationship to their objects, we have not yet been given any clear reason why we should ascribe definitional *priority* to the object over the capacity or over its corresponding activity. For all we have been told so far, it could be that capacity and object are to be defined together without priority being given to either of them.

To understand the definitional priority of the object we need to refer, as Aristotle says in T1, to 'the same reason' for which thinking and perceiving were to be considered prior to the capacity, namely, that 'the activities (*energeiai*) and actions are prior in account (*kata ton logon*) to the capacities (*dunamēis*)'. However, there are two ways of understanding this claim: one which is sometimes assumed but, I think, is inadequate, and another which is more plausible, and, incidentally, brings Aristotle closer to Plato's conception of *dunamis*. On the first reading, we take the objects of thinking and perceiving to be prior in account to the activities of thinking and perceiving because they already actually have the attributes that the activity of thinking and perceiving come to instantiate when they occur. We are on this reading taking 'the same reason' in T1 to refer back not just to 'prior in account' but also 'prior in account because prior in activity, as the activity is prior in activity to the potentiality'. So in the case of vision, for example, Aristotle takes it that the visible object is coloured already prior to the act of vision and it is this colour which comes to be represented in the act of seeing it. Perception falls under a general causal scheme developed in Aristotle's physics according to which the agent of a change already is in actuality what the patient is potentially and thereby is able to make the patient actually such as itself. So, on this reading, the sense-object is prior in account to the capacity because the sense-object is already actually what the sense-capacity only

³ See also *Cat.* 7 6a37–b11.

becomes when the object acts on it.⁴ The definitional priority of the sense-object reflects its causal and temporal priority, as the efficient cause of perception.

This account is plausible as far as perception is concerned, and has been assumed by several scholars.⁵ But it does not give us an adequate *general* answer to why Aristotle would say in *T1* that the objects are prior to the *activities*.⁶ One initial problem is that the priority of the sense-object on this reading really should be just over the capacity of perceiving rather than the activity of perceiving. For it is the capacity of perceiving on which the sense-object acts so as to make it like itself. It is the capacity of seeing that takes on the colour rather than the activity of seeing: the activity of seeing is the activity of the capacity's taking on the form of the sense-object. The activity of seeing is the same in number as the action of the sense-object on the sense-capacity in the sense that the two are the same in number.⁷ Prior to the action of the sense-object on the sense-capacity the *activity* of seeing is not anything, specifically, it is not potentially seeing. So it does not make sense to say that the object is prior to the activity because it is temporally and causally prior in the manner of an efficient cause. In *T1* Aristotle is making a point *first* about the relationship specifically between activity and the capacity of thinking and perceiving and *then* a point about the relationship specifically between the objects and the activities. So it is important that we have a way of understanding the priority of the objects of the activities in a way that applies to both, that is both to the relationship between objects and activities and to that between activities and capacities.

However, a graver reason why this reading is inadequate is that it leaves us in a quandary about nutrition, the capacity which Aristotle will immediately address in this chapter of the *DA*. Aristotle infers at the end of *T1* that we should begin our inquiry with 'nutriment and sense-object and intelligible object'. But while, as we saw, the sense-object already is prior to perception in activity what the sense-faculty is in capacity, the nutriment is not, prior to nutrition, in activity what the nutritive capacity is only in capacity. Rather, it is the living being which already is what the nutriment is in capacity and which in nutrition makes the nutriment in activity like itself (416a34–b3). So Aristotle compares the nutriment to the building materials and the builder to the living being. In nutrition it is the living being which is the efficient cause, not the object. It cannot be right, then, *in general* to ground the definitional priority of the object over the capacity in the object's status as an efficient cause, even if this is the specific way in which Aristotle envisages the priority of the sense-objects.

Stephen Everson here, I think, is guilty of making the generalization without due notice to the significantly different causal stories in perception and nutrition:

⁴ Cf. *DA* III.7 4311–15.

⁵ Cf. Everson (1999) 22–9; Wedin (1988) 17; Johansen (1997) 37–8.

⁶ Wedin (1988) 13, ignoring the nutritive faculty, says: 'The general picture here is that a faculty of the soul is a capacity to (cognitively) receive objects. The exercising or functioning of the faculty is simply the receiving of the object.'

⁷ See *DA* III.2 426a15–16.

What is distinctive of food is that it is capable of feeding animate substances. Food is thus a causal notion: something counts as food just if it possesses this capacity, which is why food is non-accidentally related to what is animate (416b1–11). The objects correlated with the capacity of nutrition are thus those things which are such as to actualise this capacity. Nutrition and perception are entirely parallel in this respect.⁸

Everson's emphasis in the context, it should be said, is on the importance of the soul for either nutrition or perception taking place: but the impression made is that the soul is related causally in the same way to the food and the sense-object, and the causal role of the objects of the two are to be understood in 'entirely parallel ways'. Particularly, the impression is created that in both cases the defining contribution of the object is as the *efficient* cause, as the cause that actualizes the capacity. But as we have seen this cannot be true in any straightforward sense in the case of nutrition. What I want to do next, therefore, is to offer a clearer picture of what the object of nutrition is and how it enjoys definitional priority over both the activity and capacity. A parallel between perception and nutrition will emerge and, while it will not be complete, it will be sufficient to sustain the general definitional procedure Aristotle recommends in the opening of II.4.

Now, what attracts scholars to the problematic reading is probably the assumption that when Aristotle in *T1* says that we need to define the objects before the activities 'for the same reason', that reason too has to imply somehow that the objects are prior in account in the manner of something that is already actual, where this somehow suggests the way in which an efficient cause is prior to its patient, that is, it is already actually what the patient is in capacity. But, besides the problems already mentioned with this, the reason Aristotle gives for why the activity is prior to the capacity is simply that it is prior in account, with no implication of temporal priority. So 'the same reason' in the case of the priority of the objects should be taken to mean no more than that they are prior in account.

We can get help with what 'prior in account' means from *Metaph.* *Θ*.8. Aristotle says here that the actuality of seeing is prior in account to the capacity of seeing since by being capable of seeing we mean that which can *see*.⁹ So we need to know what it is actually to see in order to understand what it means to have the capacity to see. Similarly, by saying in *T1* that the objects of perceiving and thinking are prior in account to the activities of perceiving and thinking, Aristotle is saying that you have to understand what the sensible or intelligible objects are before you can understand what it means to be actually perceiving or thinking. It is easy to see why this should be so. Generally, it is discerning perceptibles which makes the activity of perceiving *perceiving*

⁸ Everson (1995) 177.

⁹ 'Clearly [actuality] is prior in account; for that which is in the primary sense potential is potential because it is possible for it to become actual, e.g. I mean by "capable of building" that which can build, and by "capable of seeing" that which can see, and by "visible" that which can be seen. And the same account applies to all other cases, so that the account and the knowledge of the one must precede the knowledge of the other' (after Oxford revised transl.)

rather than, say, thinking, so you need to understand what a perceptible is before you can know what perception is. Or if we, more specifically, take sight as our example: in order to understand what the activity of seeing is you need to know what colours are because it is perceiving *colours* (rather than smells and sounds, or tomatoes) that makes something the activity of *seeing*. This point is the analogue of Aristotle's explanation in *Metaph.* Θ .8 of why the activity of seeing is prior in account to the capacity. Just as you have to find out what the activity of seeing is before you can understand what is characteristic of the capacity to see (rather than a capacity for flying or hitting nails), so you need to grasp what the object of sight is if you want to learn what seeing is, as distinct from any other activities.

Aristotle regularly ties the account of a thing to its formal cause. In *Metaph.* Δ .2 (1013a24–5), and many other places, he explicates the formal cause, in distinction from the other three causes, as the *logos* of the essence.¹⁰ In *DA* II.2, when Aristotle argues that the soul is the essence or form of the body, he likewise glosses form by *logos*. The assumption is clear that when we say what kind of thing the body is we refer to its form.¹¹ Against this background, Aristotle's claim in II.4 that the object is prior in *logos* to the activities is naturally taken to imply the priority of a formal cause. For it is to the formal cause we look in the first place for an account of the essence of something.

This kind of priority in account does not imply priority in time. As Aristotle indicates, again in *Metaph.* Θ .8 (1049b17–29), while prior in account, the activity of seeing is, from the point of view of the individual *posterior* in time to the capacity to see. For before we can actually see we need first to have the capacity to see. Compare another of Aristotle's favourite examples, house-building: the actual houses are clearly prior in account to the activity of house-building, but—if we consider individual houses—the activity of building a house always precedes the finished product in time. The priority Aristotle has in mind in these cases is patently that of a formal cause: house-building takes place insofar as a *house* is brought into being. It is this product here that defines house-building and distinguishes it from other processes.

So my suggestion is that when Aristotle in *DA* II.4 says that the object of the capacities of the soul are prior to the capacities and in turn to their activities he has in mind primarily the definitional priority of a formal cause. This is an appropriate priority to have in mind because it is the object that makes the suffering and makings of the soul the sort of suffering or makings they are. It is perceptual objects that make perception the kind of suffering it is, just as it is colour that makes vision the sort of perceptual suffering it is. Similarly, it is the production of nutriment that determines nutrition as a particular kind of change. We might say, then, that it is the object that defines or distinguishes (*diorizein*) it from other changes that we experience, and such defining is the proper work of the formal cause.

¹⁰ Cf. also *Metaph.* *H*.4 1044b12.

¹¹ See II.2 414a9; 414a9, 13, 27.

My interpretation is similar to that of Aquinas with one important qualification. He notes the difference in the way in which the objects of perception and nutrition are prior to the capacities. The object of perception, he says, is prior as an efficient cause, that of nutrition as a final cause:

For the type of every act or operation is determined by an object. Every operation of the soul is the act of a potentiality—either active or passive. Now the objects of passive potentialities stand to these as the causal agents which bring each potentiality into its proper activity; and it is thus that visible objects, and indeed all sensible things, are related to sight and to the other senses. But the objects of the active capacities are related to these as the final terms attained by their activities; for in this case the object is what each of these activities effectively realizes. It is obvious that whenever an activity effectively realizes anything besides the activity itself, the thing thus realized is the final term of the activity (Cf. *Nic Eth I* [ch.7, 1097a15ff]); for example, a house is the final term of building. Hence all the objects of the soul's activities are either causal agents or final terms; and in both respects they specify those activities. For, obviously, specifically diverse causal agents do specifically diverse things—as heat heats and cold chills. And so also with the final term of activity: becoming well or becoming ill differ as doings, because health differs from illness. Thus in the work of seeking definitions we have to consider the objects of the soul's operations before these operations themselves. (305, transl. R.Pasnau)

On Aquinas' reading the answer to the question why the object of the activity is prior in account bifurcates: in perception it is prior because it is the efficient cause, in nutrition because it is the final cause. On my reading, meanwhile, both are ultimately to be understood in terms of the priority of formal cause. True, the formal cause of perception is also the efficient cause and the formal cause of nutrition also coincides with the final cause; but the definitional priority of the efficient cause in perception and that of the final cause in nutrition is fundamentally a matter of the priority of the formal cause because it is ultimately the form that explains why perception or nutrition is the kind of change it is. It is of course standard Aristotelian doctrine that the efficient cause acts by virtue of actually possessing the form; and it is equally Aristotelian doctrine that the formal and final causes in natural changes coincide. As Aristotle says in *Phys.* II.8, it is characteristic of natural beings that their formal and the final causes coincide.¹² When Aquinas specifies the way in which the final cause determines house-building as a specific kind of operation he says that: 'obviously, specifically diverse causal agents do specifically diverse things—as heat heats and cold chills. And so also with the final term of activity: becoming well and becoming ill differ as doings, because health differs from illness.' Saying what health is and how it differs from illness is primarily a matter of stating the form of health, though we will of course also want to know as natural philosophers how health comes about and for what end. So Aquinas is right that the defining object of nutrition is the final cause, and this is in virtue of the process being

¹² *Phys.* 199a30–2: 'Since nature is two-fold, the matter and the form, of which the latter is the end, and since all the rest is for the sake of the end, the form must be the cause in the sense of that for the sake of which'; cf. *GA I.1* 715a3–9.

for the sake of something which has such and such a form. It is generally true of *praxeis* and *poiêseis*, of which nutrition is one, that the formal cause coincides with the final cause in this way. House-building is defined as the kind of change that produces a house, where a house is the formal cause: house-building takes place insofar as such an entity emerges. But house-building is of course for the sake of the house: the process aims at a house and is complete when a house has come about.

In agreement with Aquinas, I am proposing that the object of the nutritive capacity, the nutriment, is prior in account to the activity of nutrition and to its capacity in the way in which a house is prior to house-building and the capacity to build houses. Also following Aquinas, I take it that object in this case is also the final cause. But where Aquinas takes the objects of perception and nutrition to be prior in different ways, one as an efficient the other as a final cause, my suggestion is that we take both as prior in account by virtue of being the formal cause.

Once we understand the priority of the object in this way a number of features of Aristotle's discussion of nutrition falls into place. He opens his account of nutriment with a mini-dialectic between those who say that like is nourished by like and those who claim that it happens by feeding on something unlike. In one way, this dispute is easily resolved in favour of the second claim: since nutrition is a form of change and all change is premised on a difference between agent and patient, what is fed and what is feeding do have to be unlike each other prior to the change. So we see that when the food is consumed it *becomes* like the nourished body.

However, in another way the dispute can be resolved in partial favour of the like-by-like camp. For there is a distinction to be drawn in the notion of 'nutriment' between the food before and after it has been concocted:

Whether the nutriment is the final thing that is added or the first makes some difference. If we use both, on the one hand the unconcocted food and on the other the concocted food, it is possible to speak about food in both ways. For *qua* unconcocted the opposite is nourished by the opposite, but *qua* concocted what is like is nourished by what is like. So it is clear that both sides in a way are speaking correctly and not correctly. (*DA* II.4 416b3–9)

Now the distinction between the first and the final nutriment is clearly crucial in terms of understanding the proper object of nutrition. One might think that the first nutriment has a claim to being the proper object of nutrition,¹³ or at least a claim to featuring in the account of the proper object. So Aristotle is concerned at first (416a21–9) to make clear that only certain opposites nourish certain other opposites. So it is only an opposite which is capable of turning into another, and capable of causing growth in an opposite that can serve as nutriment (that excludes qualitative opposites like sick and

¹³ This seems to be the view of Corcilius (2008) 37: 'Aristoteles geht deswegen nicht von den Gegenständen als den fertigen Produkten seelischer Tätigkeit, sondern von deren äußeren, noch potentiellen Gegenständen aus, um sich dann zur Definition des seelischen Vermögens vorzuarbeiten. Beim *vegetativen* Vermögen ist der Gegenstand also nicht die fertig verdaute Nahrung, sondern die dem beseelten Körper noch äußerliche Nahrung.'

healthy). Moreover, opposites do not always mutually nourish each other: fire may be fed by moisture, but not the other way around. At least this point seems to be true of the simple bodies. These points restrict what can count as first nutriment in general, but they say very little about what the activity of nutrition does. The first nutriment seems to be determined rather in the manner of the materials of a process. The strictures on first nutriment are comparable to the limitations to what can serve as building materials: you cannot make a house out of butter, only bricks and such-like. But this is just the starting point for building, and the limitations on the materials are in a sense only to be understood in relation to the finished product. Once we know what a house is and is supposed to do, we see why it can't be made out of butter. We need then to turn to the product of the nutritive process, the final nutriment, to understand why there are these limitations on the first nutriment. We might to some extent include the materials in the account of the nutriment, but clearly what will differentiate the nutriment properly speaking is the final nutriment.

In articulating the process of nutrition, Aristotle himself employs the model of building (416a34–b3):

Moreover, the nutriment suffers something by what is nourished, but this does not suffer anything by the nutriment, just as the builder does not suffer anything by the matter but this by him. For the builder only changes from inactivity to activity.

Aristotle compares the agency of the nourished body on the food to that of a builder working on his materials. There are several aspects to this comparison: the first is that the nutriment, clearly the first nutriment, plays the role of matter in nutrition. By receiving a form which the agent, the nourished body, already possesses the food is turned into something like the nourished body. Through this process the food becomes final nutriment, which can be added to the body. Another aspect is that just as the builder already contains the form of the house—in his soul as Aristotle tells us¹⁴—so the nourished body already has the form it imposes on the food; with respect to this form the nourished body changes no more in nutrition than does the builder when building the house. In building he simply shows in activity a form he already possesses.

We are now ready for what appears to be Aristotle's core notion of nutriment in *DA* II.4, the notion which will give us the proper object of nutrition:

Since nothing is nourished which does not participate in life, what is nourished would be the ensouled body, *qua* ensouled, so that also nutriment is in relation to what is ensouled, and not accidentally so. But being nutriment (*trophê*) and being the cause of growth are different things: for insofar as the ensouled is a certain quantity, the [food] is the cause of growth, while insofar as the ensouled is a certain something and a substance, it is nutriment: for the nutriment saves the substance and the substance exists as long as it is nourished, and it is productive of coming into being, not of the thing nourished, but of something such as what is nourished: for the substance

¹⁴ *Metaph.* VII.7 1032a32–b14.

of it [sc. what is nourished] already exists, and nothing generates itself, but rather saves itself. So the principle of the soul is a capacity such as to save what has the capacity *qua* being such as it is, and the nutriment provides the activity: for nothing is capable of existing if deprived of nutriment . . . (DA II.4 416b11–20)

Aristotle does two things here. First, he characterizes the nutriment as being essentially related to what is ensouled. This point cancels out the earlier comments about fire being nourished by water, if this is understood as a process not regulated by soul. Second, Aristotle further specifies what the object of *nutrition* proper is by differentiating it from the proper objects of growth and generation. This differentiation on the object side in turn allows him differentiate between the activities of nutrition, growth, and generation. Nutriment maintains the substance and particular thing *as such*. Hereby we are spelling out an implication in the description of the final nutriment as *like* the nourished body. The nutriment, the final nutriment, that is, has the same form as the particular nourished body. It is the function of nutriment to maintain the nourished substance as such, and in this respect the nutriment differs from the food considered as a source of growth. A few lines later (416b19), Aristotle describes the nutriment as what provides the activity for the nutritive soul in saving the living being. This is a function that clearly belongs to the final nutriment, the digested food. The proper object of nutrition, then, is the final nutriment, in virtue of possessing the same form as the nourished body. We can now define the *activity* of nutrition and capacity of nutrition according to this object. So the activity of nutrition is the process by which nutriment of such and such a form comes about, while, finally, the capacity of nutrition is the capacity to engage in this activity.

Now understanding the final nutriment by virtue of its form points us on to the soul as the proper formal cause of nutrition: for the form of the final nutriment is just that of the nourished body, and the form of the nourished body, which makes it the particular substance it is, is the soul. The final nutriment is isomorphic with the living body whose form is the soul. In this way the formal cause of nutrition can be understood both as the form of the final nutriment, the proper object of nutrition, and as the form of the living being that is being maintained.

One issue that requires clarification here is in what way, if any, the final nutriment has the form of the whole living being. If one takes the final nutriment to be what is added to the various body parts, then presumably there will be one final nutriment to replenish the heart, another for the liver, and so on. Galen ascribes specific capacities responsible for attracting nutrition to the various parts of the body in a way that apparently reflects the worry that the nutriment is too generic to replenish the specific parts of the body.¹⁵ There is no evidence of this sort of move in Aristotle. He may have deemed it unnecessary because he thinks of the final nutriment as what replenishes the *whole* body. The nutritive faculty does not replenish the various body parts individually

¹⁵ On *The Natural Faculties* XIII.

but holistically. Aristotle refers to the nutriment as ‘what provides being for the whole and the parts’ (*GA* II.6 744b34–5). It is very clear that the matter that goes into forming one body part is related to what goes into other body parts. In the generation of the body, nature is like a house-keeper who distributes the best food to the best parts (*GA* 744b18–28). And a shortage or surplus of matter in one area of the body has implications for the composition of another area: ‘Nature gives something to one part of the body only after it has taken it away from another part’ (*PA* II.14 658a35–6).¹⁶ If we view the nutritive capacity as working holistically to maintain the form of the entire body, we can see why it may be appropriate to refer to the final nutriment in the singular—as at *GA* 744b34–5—for the nutriment that replenishes the different body parts, as well as thereby the whole.

The analysis I have put forward underlines the larger claim of this chapter that the soul is the formal cause of the living beings. The additional claim that the soul is the efficient and final causes is also substantiated. As far as the efficient cause is concerned, it is the ensouled being that turns the first nutriment into final nutriment, and so works as the efficient cause. When Aristotle says, as we just saw, in *DA* II.4 416b11–20 that the nutriment provides the activity, this is therefore fully compatible with saying that the soul is the efficient cause, since it is the soul, with the assistance of the body’s connate heat, which has turned the nutriment into the final nutriment. As far as the final cause, the nutriment serves the end of saving the living being such as it is, but such as it is means a being having a certain form or soul, so again the reference to the saving function of the nutriment makes essential reference to the soul.

This account has been objected to on the grounds that it threatens to make the account of the nutritive capacity circular.¹⁷ For if the object of the nutritive soul is the final nutriment and this makes reference to the soul, then we are defining the soul, namely, the nutritive part, with reference to soul. There are two replies to this objection. One is to recall that it is a general feature of productive capacities that they are defined with reference to the same form they able to produce. However, it is also true of such productive capacities that they are themselves ways of possessing the same form as that of their product. Having the same form as the product is what enables the capacity to make the product. So architecture is a productive capacity to make houses. The nutritive soul is then a kind of soul which can produce another soul of the same sort, just as the art of architecture is a kind of form, that of a house, which has the ability to produce another form, like itself. One reason why this is not circular is that both architecture and the finished a house can be seen as different instances of the form taken more generally, where architecture is one way of possessing the form, houses another. It is not true to say then that the productive capacity depends definitionally on the specific form of the product. (This difference is shown by the fact that houses are

¹⁶ See further Johansen (1997) 172–4.

¹⁷ By Klaus Corcilius in correspondence and by a member of the audience at the Southern Association in Ancient Philosophy meeting in Oxford 2008.

not able to make other houses.) The isomorphism between productive capacity and product is established at a higher level than either, at the level of the form itself.

The other possible reply is to qualify the isomorphism in a different way: the nutritive soul has the ability to reproduce the whole soul, the soul in all its capacities. We see this already in the development of the foetus where the nutritive soul is responsible for developing the sense-organs and with them the second-level capacity to perceive. The process of replenishing all the organs and thereby maintaining all the associated capacities of soul (bar the theoretical of course) is the ongoing concern of the nutritive soul of the mature living being. To say that the product of the nutritive soul is isomorphic with its product is true only in the qualified sense: the embodied soul *qua* nutritive reproduces the embodied soul as a whole. One might use the analogy with the art of medicine: the art of medicine comprises all of health, but one may say that it is only one part of the art which is directly concerned with healing, there are other parts dealing with anatomy or research into causes or kinds of diseases which are not directly involved or may not even be relevant in therapy. This second answer may be taken as a variant on the first kind of answer in that it highlights different ways in which the cause and the effect instantiate the form, be it health, house, or soul. The difference means that we do simply repeat the same information when we present the soul as part of the final/formal cause of the nutritive capacity.

The account of the priority of the object of nutrition avoids the problem I noted at the outset of this discussion: if we understand the priority of the object as the priority of the efficient cause, it is hard to understand the priority of the object to the activity in any other way than as the priority of the object to the *capacity*; for it is the capacity, not the activity, on which the object acts. However, if we understand the priority in the manner of a formal cause the problem does not arise. What it is for nutrition to take place is for *nutriment with such and such a form* to be produced. Similarly, what it is for the activity of perception to occur is for a *sensible form* to be received. The definitional priority of the object lies in its being *this object* which specifies the kind of change that nutrition or perception is.

So, once we understand what nutriment is we understand nutrition as the process that leads to this object, just as we would understand house-building as a process that brings about a *house*. In the case of perception, we might say that we understand what vision is, say, once we have understood it as the process of being changed by *colour*. Colour works here as part of the formal cause of vision because it defines the sort of passive change vision is, and how it is differentiated from other passive changes, just as a house defines the sort of *productive* change house-building is, as contrasted with making sculptures. The definitional priority of the nutritive or perceptual object to nutrition or perception can then be put in terms of the formal cause, just as the definitional priority of a house can be expressed in formal causal terms. In the case of nutrition the formal cause will also be the final cause (under one description) while in the case of perception the formal cause will also be the efficient cause. The formal cause offers then a unifying perspective on the priority of the objects principle in its application to both nutrition

and perception. If this is right, the difference between the 'objects' of perception and nutriment, that is, that the actuality of the objects of perception temporally precedes the activity of perceiving while the proper object of nutrition does not so precede its activity, is immaterial to Aristotle's point in *T1* that in both cases the 'object' needs to be understood prior to the activity.

A final objection: the interpretation I have developed says that the object is prior in account to the activity and to the capacity of the soul because it is their formal cause. Is this claim consistent with Aristotle's featuring of the soul as itself the formal cause of the living body (*DA* II.4)? One might worry that the soul cannot itself maintain the role of *being* the formal cause at the same time as it also *has* a formal cause in the object of its activities.¹⁸ Or put more simply, if the soul is the form it cannot itself also have a form.

However, it should be clear now that the claim that the soul is the form of the body, and is prior in account to the body, does not preclude that other factors may be prior in account to it. The definition of the soul at the level of second-level capacities presupposes that there is a further activity in terms of which these capacities are defined. So presenting the soul as the formal cause of the living body is never meant to preclude that there may be some further formal cause for the soul. Nor therefore does the claim that these activities have a formal cause in their object need undermine the claim that the soul is the formal cause of the body. That Aristotle is fairly sanguine about the compatibility of saying both that the soul is a form and that it has forms as its objects is clear from his reference to the sensory faculty as the form of perceptible forms and the intellect as the form of forms.¹⁹

However, part of the worry behind the objection may be the thought that the soul as the *substantial* form of the body should not have further forms on which it definitionally depends. The concern opens major metaphysical issues in Aristotle, which cannot be adequately dealt with in a book on his psychology. However, it is worth noting that the issue has already been indirectly touched on in the last chapter: in so far as capacities occur in the definition (*definiens*) of the soul there is no presumption that they themselves should fall in the category of substance. We need not think therefore that the capacities of the soul on the basis of their role in defining the soul should themselves enjoy whatever definitional priority we assign to substance terms. Just as the definition of a substance 'two-footed tame animal' employs non-substance terms ('two-footed' 'tame') which are definitionally dependent on other items, so the definition of the soul of a certain living being may refer to capacities whose definitions themselves show their dependence on other factors, in this case their objects.²⁰ From the point of view of their role in the definition of a substance the latter case seems in principle no more problematic than the former.

¹⁸ I am grateful to Klaus Corcilius for pressing this objection on me.

¹⁹ *DA* III.8 432a2–3.

²⁰ Recall also that the claim of Chapter 3 was that the capacities that were parts of the soul were definitionally independent of each other, not that they were definitionally independent *tout court*.

If the worry is still that the definitional link between soul and objects shows an ontological dependence of the soul on other external factors, then this is hardly surprising. The soul as a principle of change is not ontologically independent of the world around it, but depends for its activities on a range of other causes. As we shall see in the next chapter, the causal dependency of the soul on its environment is complex and varied. We should not expect of it an ontological or causal independence enjoyed only by god.

The Unity of the Nutritive Soul

Plato's primary concern in *Republic V* was how we identify and distinguish capacities. Socrates said that two capacities count as the same if they are set over against the same thing and produce the same thing, otherwise not. Aristotle seems to follow suit: he too takes capacities to be identified and distinguished by their objects. So in the *DA* Aristotle says (422b23, 426b8–10) that each sense-faculty distinguishes differences within one kind of sense-object. In *Nic. Eth.* VI he distinguishes the different kinds of knowledge according to their objects, what is universal and necessary, what can be otherwise, and so on. However, this procedure throws up problem cases. So difficulties arise when delimiting the proper object of certain perceptual capacities, and I shall shortly consider two such cases: touch and smell. But first I want to consider the case of the nutritive soul.

If Aristotle generally thinks that it is the proper objects of capacities that differentiate them, we may wonder how the nutritive and the reproductive capacities can consistently be held to be one capacity; and, we might add, the capacity for growth, which is also ascribed to the nutritive soul. Aristotle treats the capacities for nutrition and generation as one when he says that it is the function of the nutritive soul to generate and use nutriment:

its [sc. the nutritive soul's] function is to generate and to use nutriment: for it is the most natural of functions for living beings, i.e. for such as are complete and are not defective or engage in spontaneous generation, to make another thing like itself, an animal making an animal, a plant a plant, in order to participate in the eternal and divine to the extent they can. For all living beings desire that thing, and do all the things they do by nature for the sake of it. (415a25–b2)

And at 416a19–21 he explicitly states that the nutritive and the reproductive are the same capacity of the soul:

Since the nutritive and the generative are the same capacity, it is necessary first of all to determine what nutriment (*trophê*) is; for it is by this work (*ergon*) that it is marked off from the other capacities.

That by *trophê* Aristotle means the nutriment rather than the act of nutrition seems to be confirmed in the next sentence where he says that one opposite is nutriment for another. Indeed, in this part of the chapter Aristotle seems consistent in using *trophê* for

the object of nutrition.²¹ I take the work (*ergon*) of this capacity to be to produce *nutriment*, just as one might say, with *Republic* I (335d), that it is the *ergon* of heat to make something hot. This explains the awkwardness of using ‘this work’ to refer back to ‘nutriment’: the work just is making *this thing*. What is quite clear from the passage, however, is that Aristotle relates the unity of the capacity of nutrition and generation to their having a single object, the nutriment. This is of course what we would expect given the priority of objects.

The problem is that, as we saw, Aristotle also determines the proper object of nutrition, the nutriment, in distinction to the objects of growth and generation (II.4 416b11–16):

being nutriment (*trophê*) and being the cause of growth are different things: for insofar as the ensouled is a certain quantity, the [food] is the cause of growth, while insofar as the ensouled thing is a certain something and a substance, it is nutriment . . . and it is productive of coming into being, not of the thing nourished, but of something such as what is nourished . . .

So, the food is the object of nutrition *qua* preserving the *ousia* of the living being; it is the object of generation *qua* causing another living being; and it is the object of growth *qua* causing an increase in the size of the living being. The problem of how such different objects can correspond to the same capacity seems particularly pressing when we compare nutrition and generation, on the one hand, and growth, on the other, since here the object is specified in categorically different terms: nutrition and generation preserving or bringing into being a substance, and growth causing change in the category of quantity.

To say that the object is still the same even if it is specified in different ways is clearly no answer here. For the same sugar cube may be both white and sweet, yet it is *qua* white a proper object of vision and *qua* sweet of taste. It is, then, the specified attributes, what follows the ‘*qua*’, which serve as the proper defining objects of the various capacities, not whatever happens to have the attributes, what precedes the ‘*qua*’.

The answer lies rather in the point I have been stressing so far, that the nutritive capacity is defined in relation to nutriment by virtue of its having a certain form. I want to suggest that nutrition, generation, and growth can all be seen as sharing the same formal cause, despite their differences, and therefore can be seen to be activities of the same basic capacity. Let me say how this helps us understand the unity of the generative and the nutritive capacities first, before proceeding to the apparently more difficult case of growth.

The unity of the objects of generation and nutrition emerges clearly if we consider the process by which the nutriment is formed, concoction (*pepsis*). Aristotle assumes in

²¹ I think commentators have generally made too much of the possible ambiguity in Aristotle’s argument between *trophê* as meaning ‘nutriment’ as meaning ‘nutrition’. While the juxtaposition of *trophê* with *gennêsis* at 415a23 makes it tempting to think of *trophê* as the process of nutrition, line 26 shows that Aristotle may just be speaking loosely of the nutriment in the context of its use.

DA II.4 that we understand what is meant by *pepsis*. It is one of the points where we should bear in mind Aristotle's warning at the end of the chapter that his account of nutriment is an outline (*tupos*), no more, to be clarified in the proper works for this subject, that is not in the *DA*.²² It is likely that Aristotle has in mind primarily, though not exclusively, the *GA*.²³ For in the *GA*, more than any other extant work, Aristotle gives a detailed account of the formation of the nutriment. This account is called for in the *GA* because the semen and the menstrual blood that go into generating the offspring are essentially residues of nutriment. This residue is produced by concoction.²⁴ The story, in brief, is that the food when ingested is cooked up—Aristotle's analogue to digestion—by means of the animal's internal heat. The food then turns into blood, which replenishes the various parts of the animal's body. The blood is finely differentiated to suit the particular animal concerned—dog blood differs from cat blood. It is this stage of concocted blood that is referred to in *DA* II.4 as 'the last thing that is added'. Now when the animal is healthy and well fed there is further blood left over from the concoction. This residue when concocted becomes semen. As a further concoct, the residue contains even more heat, the formal principle, and is therefore able to generate another living being. It is an important point for Aristotle that the semen is a residue of nutriment since it explains why the offspring resembles the parent: as a residue of nutriment the semen has the same form as the nutriment used to replenish the father's own body, and so it has the form required to make another being *like* the father.²⁵

Aristotle's account of concoction in the *Meteo.*, captures well how concoction essentially works towards the production of a certain form:

Concoction is a process in which the natural and proper heat of an object *perfects* the corresponding passive qualities, which are the proper matter of any given object. For when concoction has taken place we say that a thing has been perfected and has come to be itself. . . . In some cases of concoction the end of the process is the nature of the thing – nature, that is, in the sense of the form and the essence. (*Meteo.* IV 2 379b18–26)

It is clear by such 'cases' that Aristotle has in mind concoction as it takes place in living beings. Concoction leads to the realization of the form that defines the living being, the

²² 416b30–1: *τύπω μὲν οὖν ἡ τροφή τί ἐστὶν εἴρηται· διασαφητέον δ' ἐστὶν ὕστερον περὶ αὐτῆς ἐν τοῖς οἰκείοις λόγοις.*

²³ Ross *ad* 416b31 suggests Aristotle is referring to a lost work *Περὶ τροφῆς* or *Περὶ αὐξήσεως καὶ τροφῆς*.

²⁴ That the *GA* seems to have the status for Aristotle as the primary reference for detailed discussion of nutrition is confirmed (twice) by the *PA*: 'the manner in which the parts grow because of blood, and indeed the whole question of nutrition, will find a more suitable place for exposition in the treatise on generation, and in other writings' (650b8–11, cf. 674a19–20). The *PA* can refer to the *GA* for an account of the nutritive soul's role in formation of the parts of animals since this is fundamentally the same role that nutrition plays in forming the embryo's parts. Similarly, the *DA* can refer to the *GA* for a more detailed account of nutriment.

²⁵ Cf. 738b1–4. The mother's menstrual blood, meanwhile, provides the matter and nourishment for the embryo's growth; since this too is a concoction of the mother's blood, similarity between mother and offspring can be explained as the result of the father's semen failing to master fully the mother's menstrual fluid.

essence.²⁶ The form is, as we saw also in *DA* II.4, the final cause of the nutritive process. Both the nutriment and the semen, as stages of the same process of concoction, contain the form that defines the living being in question. Nutrition and generation have the same object then, if we understand the object as the residue of concoction *qua* having the specific form of the living being. From this point of view, the point of view of the formal/final cause, it is reasonable to say that the activities, which serve to produce *this* object, are the same and correspondingly that the capacities to engage in these activities are also the same. However, saying that nutrition and generation are the same capacities in the sense of having the same formal/final object allows Aristotle also to say that the two differ in that the object of nutrition is this form as that of the living being *itself*, whereas in generation it is the form of *another* living being. Indeed, we may say that this difference only makes sense against the background of the larger claim that nutrition and generation produce the same form.

At 416b23–5, Aristotle is explicit that he thinks it is justified to refer to the nutritive soul as the generative soul because ‘it is right to call all things by their end and the end of nutrition is the generation of another thing such as oneself’. At first glance, this statement may look like giving an alternative to the answer I have offered whereby generative and nutritive souls are unified by having the same formal cause. For does not Aristotle here bring the two together from the point view of the final cause rather than the formal cause? The question assumes a false contrast between formal and final cause. As we have seen, Aristotle takes the formal cause to be the final cause in those changes natural beings undergo as such. The end product of nutrition which defines it as this kind of change is the form of the living being in question. What underlies the teleological subordination of nutrition proper to generation is the sameness of form: generation perpetuates the same form, ‘*another thing such as oneself*’, which nutrition maintains for the living being itself. The point was apparent already in Aristotle’s remarks at the beginning of *DA* II.4. Here he said that since a living being cannot participate in the eternal and divine by remaining one and the same individual it does so by remaining *such as it is*, meaning one in form or kind (*eidos*). One might say that generation aims at perpetuating the form, nutrition aims at perpetuating the form of the individual. Generation, then, is concerned with reproducing the form quite generally, whereas nutrition is more narrowly concerned with reproducing the form for oneself. Nutrition maintains the numerical sameness of oneself, as, say, one human being, whereas generation maintains the sameness of the kind. Since generation aims to maintain the form *simpliciter*, and nutrition only in a qualified way, it makes sense to subsume the goal of nutrition under that of generation.

²⁶ Lloyd (1996) points to the variety of uses of concoction in Aristotle’s biology as evidence of its indeterminacy. Nonetheless, he still (101) presents this as an indeterminacy in the *Meteo.*’s notion of concoction, the notion of ‘bringing something to perfection or completion achieved through heat operating principally on the wet’ (85). My point here is not that all the different applications of concoction are of one kind, but that Aristotle sees explanatory advantages in tying the concoction of nutriment and semen closely together in a way accommodated by the *Meteo.*’s description.

This account may seem too easy. As Aristotle's account of reproduction shows, there are a great many parental features that are inherited by the offspring, and Aristotle thinks that optimal cases of reproduction maximize the likeness between the sire and the offspring. There is a question therefore whether and, if so to what extent, we can distinguish the general form transmitted in reproduction from the particular features of the parent.²⁷ There are far-reaching metaphysical issues at play here to do with the relationship between the universal and the particular form. However, for my purposes it may be enough to make two observations. One is that if the realization of the final cause of reproduction depended on the reproduction of individual formal features, then the final cause could not be realized over time, since over time no one of the particular features of the parent need survive in the descendants. The second point is that there need be no conflict between saying that generation seeks to reproduce the species and saying that the sire in generating also seeks to do so in a way that maximizes the likeness of the offspring to himself. It may indeed be the best way of ensuring that the offspring does have the features of the human species at a high level of perfection to try to approximate all the features of the sire, since the more similarity there is between sire and offspring the more likely the offspring is to have optimal *human* features.

In the *Symposium* (208b1–2) Plato had effectively identified nutrition and generation, using the phrase 'leaving behind another thing such as itself' for nutrition too, not just generation. Aristotle, however, makes it clear that nothing properly speaking generates itself since it already exists; so nutrition cannot be described as 'generating another thing'. On the other hand, the focus on the reproduction of the same form as the object of both nutrition and generation allows, I have suggested, Aristotle to see the two as having fundamentally the same object, despite the different modalities under which they reproduce form. From this point of view, Aristotle agrees with Plato: both nutrition and generation are essentially concerned with perpetuating the same form or type.

What about growth? The sameness of nutritive and generative capacities can, I have argued, be defended if we understand the object of both in terms of their common form, the form defining the living being as such. By implication, both generation and nutrition are here understood as processes to do with the category of substance. However, this move seems unavailable in the case of growth since, as we saw, Aristotle takes the object of growth to be what has the ability to increase the *size* of the living being. In other words, the growth seems to be a process within the category of quantity.

However, this is a simplification. Growth, properly understood, stills implies a reference to the specific form of the living being. In *DA* II.4 Aristotle admittedly only says 'for insofar as the ensouled thing is a certain quantity the food is capable of

²⁷ This sort of worry lead Balme (1987a) to deny that Aristotle's biology was essentialist. For discussion of the literature and the issues, see Gelber (2010).

causing growth' (416b12–13), which may look like growth is merely a matter of adding bulk. However, again we need to remember the outline nature of II.4 and look elsewhere for the fuller picture. In this case it is the account of growth in GC I.5. Here Aristotle is explicit that growth is not just a matter of adding to the size of something but adding to the size while maintaining the thing's *form*:

Insofar as [the acceding food] is potentially both these things, i.e. a quantity of flesh, it will produce growth (for it has become both a quantity and flesh): insofar as it is potentially just flesh, it will nourish. This is how nutrition and growth differ in definition. Accordingly, a thing is nourished as long as it is maintained in existence even if it gets smaller but is not always in process of growing. Nutrition is the same as growth, but its being is different. For *qua* potentially a quantity of flesh, that which accedes is what makes flesh grow; but *qua* potentially just flesh, it is nutriment. (GC I.5 322a20–3, transl. C. Williams)

Aristotle is clear here that it is not simply as a quantity that food produces growth but as a potential quantity of *flesh*, for it is when the flesh to which it is added becomes more flesh that growth occurs. He goes on to compare the form of the matter to a kind of pipe:

This form, like a pipe, is a sort of power in matter. If some matter accedes to it, which is potentially a pipe and which also has potentially the required quantity, these will be larger pipes. (GC I.5 322a29–31, transl. C. Williams)

To consider the food as the cause of growth is then to offer a double determination: to see it as a potential form, as potential flesh, a pipe, but also as a certain potential quantity of flesh, a bigger pipe. While determining food as a potential *quantity* of flesh differentiates it from the objects of nutrition proper, flesh, in this example, there is still the essential reference to the same form, that of flesh. It again makes sense therefore to see growth as an exercise of the same basic capacity to reproduce the form of the living being, that is, as an exercise of the nutritive capacity.

To take stock: I have been concerned in this chapter to characterize the proper object of nutrition in a way that allows for a consistent overall notion of the priority of the objects in relation to the various capacities and activities of the soul, both the passive ones like perception and the active ones, like nutrition. My claim was that the object should be understood in the first instance as the formal cause of nutrition, which supported the idea that the object was prior in definition because the form was the primary object of definition. In the second part of the chapter, I argued that understanding the object of nutrition in this way also helped explain the unity of the nutritive soul, as responsible for both nutrition proper, generation, and growth, in that these three activities, despite their differences all made essential reference to the same form, that of the living being in question. In this way the account of nutritive activities led us back to the primary notion of soul as the form and final cause of the body. It is the job of the next chapter to see whether these conclusions about the nutritive capacity can be generalized so as also to apply Aristotle's account of perception.

Problem Cases

Before that, I turn to two further problem cases for the object criterion. The challenge in the case of nutrition, generation, and growth was to see how the three, despite the different descriptions of their objects, could on this criterion still be thought of as belonging to the same capacity. Here the implicit threat was an unwanted proliferation of capacities. The sense of touch might seem another such case. Aristotle says that the object of touch (*haphê*) is the tangible (*to haptôn*), as we might say that the object of vision is the visible, or of hearing the audible (*DA* 424a12). However, when we specify what the tangible is there emerges a range of different qualities, whereas in the case of vision it was, apparently, just colour, and in hearing sound. By touch we perceive hot and cold, dry and wet, hard and soft, and other qualities. So why is touch not really a conglomerate of capacities rather than one? It is a question Aristotle himself raises (*DA* II.11 422b18–19). Today the general view would be that touch is not a single sense but rather a system of mechanisms employing different kinds of receptors for different kinds of tangible input. So what are Aristotle's reasons for taking touch to be a single sense, despite the difficulties he himself notices? We can see a general motivation for Aristotle to treat touch as a single capacity, if he is, as I am suggesting, seeking to explain the varieties of psychological behaviour by reference to the fewest possible number of psychological capacities. But it is clear that he also needs specific arguments to maintain this position *vis-à-vis* problem cases such as touch. Aristotle's opening gambit is to soften the contrast between touch and the other senses. Hearing too registers a range of different opposite qualities, we hear a voice, for example high or deep, loud or soft, smooth or rough. And something similar may hold true of differences in colour: we can think of differences in hue and illumination, for example. The key point is that these are all differences of *sound* or *colour*, which are then the unitary proper objects of hearing and sight. But Aristotle confesses that it is not all as clear what the tangible differences would be differences of (423a33). The answer comes a bit later in *DA* II.11 when Aristotle says that 'the tangible differences are [differences] of the body *qua* body, I mean the differences which define the elements, hot and cold, dry and wet, about which we have spoken earlier in the work on the elements' (423b27–9). The reference is to *GC* II.2. Here Aristotle argues that tangible qualities and tangible qualities alone are constitutive of body as such, and amongst these the four just mentioned are basic. The parallel with the other senses seems to be back on then: just as we can say that the various auditory differences are constitutive of sound as such, so we can say that the two pairs of tangible differences, hot and cold, dry and wet, are constitutive of body as such, and we can take body as such to be the unitary proper object of touch. It is Aristotle's physics then, which shores up the unity of the object of touch, by relating the various tangibles as essential to body as such.

An added advantage of viewing touch as related to body as such is that it helps provide a basic premise for Aristotle's argument in *DA* III.12 about why we have touch: 'Since the animal is an ensouled body, and every body is tangible [and what is

perceptible by touch is tangible], it is necessary [also] for the body of an animal to have the sense of touch (*haptikon*), if the animal is going to survive' (434b11–14).²⁸ As bodies in the world, we need a sense that allows us to perceive other bodies in the world, and that is what touch represents. For touch picks up on the tangible and every body is tangible, since, as we now know, every body is constituted of tangible qualities.

The case of touch is complicated by the fact that Aristotle seems to also employ another criterion to single out this capacity, namely the way in which touch operates by contact between the perceiver's body and the objects. It is this observation which makes Aristotle sometimes treat taste, despite its different object, as being a form of touch. However, I would urge that we take the claim that taste is a form of touch as not implying that taste is an aspect of the capacity of touch, properly defined. First of all, taste has its own proper object, flavour, which while it is caused by a combination of the wet and the dry, tangibles, is still a distinct quality. It is 'an affection (*pathos*) arising by the dry in the wet' (*Sens.* 441b19). Neither of the tangibles, the dry or the wet, is then as such flavoursome or tastable. Second, the claim that the taste is a form of touch is generally made in the context of contrasting touch and taste as contact senses with vision, hearing, and smell as distance senses. 'Contact' here translates the same word as touch, *haphé*.²⁹ While Aristotle is clear that we call the sense of 'touch' so because we touch things when using it,³⁰ it is not thereby implied that every sense, including taste—which works through contact with its object—is the same sense as touch. We need not take calling touch and taste 'touch', that is contact senses, to imply that they are the same, just as there is no identification of vision, hearing, and smell implied by our calling them all 'distance senses'.³¹

I have suggested that Aristotle's claim that taste and touch are different capacities can stand its ground both against the objection that taste and touch somehow have the same object in the dry and the wet, and against the claim that the way they operate by contact leads to an identification of the two. However, there is another threat to the distinction between the five senses involving taste, this time coming from smell. Smell, as Aristotle recognizes, is closely related to taste. One sign of their closeness is the way in which we call the various odours by the same names as flavours: pungent, bitter, sharp, or oily, are Aristotle's examples.³² Often, but not always (421a29), the *object* that tastes bitter will also smell so, but the range of odours and flavours themselves overlap.

²⁸ Ross (1961) 323 takes the text he puts within square brackets to be spurious, and reconstructs the argument as follows 'Since an animal is a living body, and every body can be touched, an animal's body must be capable of perceiving by touch, if the animal is to survive'. However, unless it is made clear the tangible is essentially such as to be perceived by touch it may not seem necessary that *touch* be required to make sure that animals perceive other bodies. It is not impossible that other senses could pick up on tangible qualities, so it is worth labouring the point that the tangible is *essentially* what is registered by touch. Having touch in this way *ensures* that you will perceive the tangible, even if it is accidentally perceptible by other senses.

²⁹ See *DA* III.1 424b27–30.

³⁰ *DA* III.13 435a17–18.

³¹ For further discussion of the relationship between touch and taste, see Johansen (1997) 178–215.

³² *DA* II.9 421a26–b3.

The reason for this is that the same elements, the dry and the wet, which as we saw produce flavour, are also involved in the perception of odour. As Aristotle explains in the *Sens.*: ‘For what the dry produces in the wet [i.e. flavour], this the flavoured wet produces in another kind, in air and water equally’ (442b28–9).

The lines are by no means clear, and present us with two interpretative options. Either odour arises by the action of the flavoured dryness on air or water, or it arises by the action of the flavoured wetness on air and water. This choice has repercussions for how we see the relationship between odour and flavour, since on the second reading odour seems to arise from a further action of the flavoured wetness, which would already be flavour. On the first reading, meanwhile, we can take flavour and odour to share an element, the flavoured dry, but then distinguish them in terms of whether the flavoured dry acts on the wet or the dry to create odour or if it acts just on the wet to create a flavour proper. If the second reading is right, we shall have more problems with keeping smell and taste apart on the object criterion, since on this reading the object of smell is essentially flavour in some manifestation.

Fortunately, I think there are reasons to favour the first reading,³³ the one that takes odour to be the result of the action of flavoured *dryness*. For it becomes clear that the action on the wet or the dry that Aristotle is referring to in the lines just quoted is the action of the flavoured dry on the medium of smell. While flavour arises only in water—that is why we need moisture on the tongue—odour, we are told, exists both in water and air. Aristotle continues from the lines cited:

We were just saying that the transparent is common to these [i.e. air and water], but it is smellable, not *qua* transparent, but *qua* being able to wash or cleanse the flavoured dryness. For the object of smell exists not only in air but also in water. (*Sens.* 442b29–443a3)

The comparison with the transparent suggests that Aristotle is thinking of air and water in a mediating role: what corresponds to the way in which the transparent mediates colour in vision is the way in which air and water mediate odour by being able to ‘wash’ the flavoured dryness. But if so, we should not confuse the action of the flavour dry on the wet in creating flavour with its action on air and water in odour: in the first action the dry is mixed with the wet to create flavour, in the second the flavoured dry is mediated to the perceiver through the air and water, insofar as these have the ability to ‘wash or cleanse’ the flavoured dry. It is this difference which explains why the flavoured dry is tasted only in a liquid state, whereas odours can be smelt either through the air, as by humans, or through water, as by fish. While there is an important common factor in flavour and odour, that is, the flavoured dry, which explains why we relate them to each other, there is also a significant difference between the two which ensures that the definition of odour differs from that of flavour. Given this difference, we can maintain, on the object criterion, that the definitions of the capacities of smell and taste differ.

³³ For a full account, see Johansen (1997) 231–7.

One might have thought that given his concern with explanatory economy Aristotle would have pushed more strongly to identify smell and taste, by bringing the accounts of their objects even more closely together. However, explanatory economy has to be weighed against empirical adequacy. Aristotle has learnt from the fishermen that fish have a good sense of smell: when the fishermen put out fresh and savoury bait fish will come at once from long distances.³⁴ Fish however have a poor sense of taste. The difference in perceptual performance reflects the difference in the object of the two senses: since the flavoured dry is mixed with liquid in forming flavour it is subject to dilution in the sea. There is therefore little opportunity to savour flavours in water, and water animals have accordingly been allotted a short tongue, if any.³⁵ Luckily fish can detect the flavoured dry by smell instead. Since the flavoured dry is not mixed with the wet but rather mediated by it in smelling, the problem with dilution does not arise. Man also illustrates the difference between smell and taste, since humans have the best sense of taste,³⁶ but a poor sense of smell.³⁷ The postulation of five senses, not four, has empirical evidence on its side.

³⁴ See *HA* IV.8 534a12–b11, and especially 534b3–5.

³⁵ *PA* II.17 660b17–22.

³⁶ *PA* II.17 661a12–30.

³⁷ *DA* 421a10–11.

6

The Importance of Nutrition

Aristotle emphasizes the connection between having life and being ensouled: he takes it to be the essence of soul to bring about life and he, therefore, takes the ability to explain life to be a crucial test of a successful definition of soul. Aristotle is therefore also particularly sensitive to the variety of kinds of life that a successful account of the soul has to explain. So he complains at the beginning of the *DA* that his predecessors have limited their investigations to the human soul (402b3–5). The consequence is that they have tended to define the soul narrowly in terms of reason and perception (cf. 410b22), rather than through the wider range of capacities characteristic of other life forms. But, if like Aristotle, we take our starting point in investigating the soul in terms of what explains the varieties of life, it is clear that any adequate account of the soul has to be one that also explains how non-human animals of all sorts as well as plants are alive.

Accounting for the variety of life forms means, for Aristotle,¹ in the first instance accounting for the sort of soul that makes plants alive, that is, the soul which is responsible for nutrition, growth, diminution, and reproduction. For this is a capacity that all living beings (bar god) have, and it is the only capacity in virtue of which plants are alive. So by starting out our account of the capacities of the soul by looking at the nutritive soul we are investigating a kind of soul that is basic to all life, and, we might think, a kind of soul that as the minimum condition for any life has a strong claim to being constitutive of life as such. As Aristotle says in *DA* II.1, his first attempt to define the soul, ‘we call life the nutrition and growth and diminution by means of oneself’ (412a14–15, cf. 413b1–2). If we take soul, then, to be a cause of life, and life is in its most basic form a matter of being able to sustain oneself through nutrition, then it is clear that nutrition will have a fundamental role to play in the account of soul. In Aristotle’s survey of earlier thinkers, however, there is not a single one who appears to have accounted for the nutritive soul. The impression is created that Aristotle is innovating the study of the nutritive soul in a way which makes up for a major shortcoming in his predecessors’ approach to psychology.

¹ Plato too had insisted in the *Timaeus* 77a–c that plants were alive and therefore ensouled, but had accounted for their souls in terms of the lowest of the three kinds of soul developed in the context of human soul, thus lending credence to Aristotle’s claim that his predecessors had an overly anthropocentric approach to psychology.

By defining the soul in its capacity to cause nutrition, Aristotle will have defined a kind of soul that all living beings have. Could one say, then, that by defining the nutritive capacity Aristotle will have defined soul for all living beings? This suggestion may seem attractive in light of two aspects of Aristotle's 'most common' account of the soul in *DA* II.1 as 'the first fulfilment (*entelekheia*) of a natural body having life in capacity (*dunamei*)' (412a27–8), namely 'life' and 'first'. So, as we saw, Aristotle has just presented *life* as a matter of nutrition ('we call life the nutrition and growth and diminution by means of oneself'). Meanwhile, 'first' in 'first fulfilment' has just been understood as first in coming-into-being, where the nutritive capacity is the first capacity that living beings acquire in their development. So it may seem that for Aristotle the nutritive capacity plays a privileged role in the common account of soul, as that in terms of which we generally understand living beings to be alive.² If this were true, we would have to revisit the earlier analysis in Chapter 3 which left us without any generic or core homonymous notion of life.

Against the suggestion that nutrition provides the basic concept of life, I would argue that the claim that life is a matter of nutrition is best read as a minimal condition of life. In *DA* II.2, as we have seen, Aristotle says that 'life is said in many ways' and we say that something is alive, and has a soul, as long as it has at least one of understanding, perceiving, the ability to move around, or nutrition. Nutrition is in fact the one capacity that all mortal beings must have to stay alive, but that does not mean that living is not said with equal reference to the other capacities. If soul is defined as a cause of life, and any of these kinds of capacities is sufficient for us to ascribe life, then a definition of soul must apply to all of these capacities. It is, then, one thing to define a kind of soul that all living beings have, quite another to define soul for all living beings. To use an analogy, even assuming that all ice cream cones come with a scoop of vanilla, we cannot define all ice cream by reference to vanilla ice cream. It is one thing to be a common constituent of the soul, another to be a common denominator.

One might rightly think, however, that this point allows for a range of different ways in which the nutritive soul can enjoy definitional priority in relation to the other kinds of capacity. As we saw in Chapter 3, one standard way for Aristotle to allow that a term is said in many ways while still ascribing definitional priority to one of them is what is known as 'focal meaning', or what Christopher Shields calls 'core homonymy'. This is the notion illustrated in the *Metaph.* by the example of healthy: it is one thing for a man to be healthy, another for food to be healthy or activity to be healthy, but they are all said in relation to the health of man as the focal or core case, in that ultimate reference has to be made to the health of man in order to understand the way in which these other things are healthy. Similarly, one might think that while moving around or perceiving is an expression of life, the central case is that of taking nourishment. The problem with this suggestion is that it is quite hard to see how perceiving, say, could be

² Cf. King (2001) 40–8.

definitionally related to nutrition. Aristotle in *DA* II.3 compares (as we saw) the relationship of the different kinds of soul to that of a series of geometrical figures. The upshot was that each kind of soul had to be defined individually (*kath hekaston*, 414b33), not that each kind had to be defined in relation to the previous kind. Even if accepted, with Shields, that the homonymy of 'life' allowed for core dependency,³ it is hard to see, then, how *nutrition* could be the core.

There is, however, a way in which one might still want to insist on the primacy of the nutritive capacity in relation to the others. Consider Aristotle's account of the growth of an embryo: the embryo grows in a way that is specific to the kind of living being it is. To be sure, Aristotle does compare the embryo of an animal to a plant, because it as yet only possesses the nutritive soul, not the perceptual or locomotive capacity; however the key point is that the nutrition of an animal embryo works towards the formation of specifically animal parts.⁴ From this point of view, we might want to insist that the nutritive soul is properly constitutive of life in that it works to build up and maintain the specific kind of substance that each kind of living being is. The strategy here might be called a non-reductive prioritization of nutrition: nutrition means different things in different living beings in such a way that nutrition incorporates perception, say, in animals. We say, then, for all living beings that what it means for them to be alive is to have a nutritive capacity, but when we look at each kind of living being we find that the nutritive capacity works in a way specific to its overall psychic constitution.

The problem with this suggestion is that it still ascribes too much definitional priority to the nutritive soul in relation to the other capacities. We say that an animal is alive as an animal specifically because it has a perceptual soul, and the nutritive soul is in the context of an animal definitionally subordinate to the perceptual capacity. Living for an animal means primarily to perceive, secondarily to take nutrition. Aristotle said in *DA* II.3 that for an animal the nutritive soul is potentially present in the perceptual soul. But the claim that the perceptual soul is contained in the nutritive soul of an animal seems to get this relationship the wrong way around. It is true that in the development of an animal the nutritive soul is temporarily prior, but for Aristotle the end which is temporarily posterior is definitionally prior. So the perceptual capacity takes priority over the nutritive soul in the definition of an animal soul. And since the message of *DA* II.3 is that each kind of soul has to be defined separately, the soul cannot be generally defined at the level of nutritive soul. There is then an important difference between, on the one hand, saying something that is true of all souls insofar as it is true of the nutritive kind, and, on the other hand, saying something that is true of all souls because it is true of all kinds of soul, nutritive, perceptual, locomotive, and so on. For an account of soul to be truly general it would have to be true of all kinds of soul in the latter sense, and this cannot be achieved simply by defining the nutritive soul.

³ Cf. Chapter 3 pp. 50–1.

⁴ Cf. King (2001) 20–1, who stresses this kind of point.

Defining nutrition cannot serve to define soul in general nor can nutrition serve as a focal point for defining the other capacities. Yet I want to hold on to the insight that the nutritive soul plays a special role in relation to the definition of soul which leads Aristotle to devote his first chapter on the capacities of the soul to nutrition. The suggestion I shall make is that Aristotle gives priority to nutritive soul in his account of the soul because nutrition serves as a paradigm of how the soul works as the nature of living beings. The nutritive soul thus has a special status among the capacities of the soul by illustrating how the soul works so as to bring about life. It is of course of great importance that the nutritive soul is one that all living beings have. But the paradigmatic status of the nutritive soul lies in the extendibility of the causal analysis to the other capacities.

I take my cue from Aristotle's claim in *DA* II.4 that the nutritive capacity is the most natural (*phusikôtaton*) of all the functions of living beings. The claim is a nod to Plato's *Symposium*, where it was suggested that it is in the nature (*phusis*) of mortal beings to perpetuate themselves through generation, that is, by leaving behind another thing like themselves, either by nourishing themselves or by having children.⁵ The reference is further developed when Aristotle says that since it is impossible for the same living being to remain one in number it participates in the divine and immortal by being the same kind, by remaining not itself but such as itself, using the key phrase from the *Symposium*. Later in *DA* II.4, as we saw in the last chapter, Aristotle distances himself from Plato's merging of nutrition and generation, but at this stage he is content to follow Plato in presenting generation and nutrition as a single function (*ergon*).

But there is much more to Aristotle's use of 'most natural' than a Platonic echo. For the claim directly relates to Aristotle's own idea of nature. I suggest that the reason why the nutritive soul has such prominence in the account of soul is the way the nutritive soul in particular shows the soul to be nature in Aristotle's sense. To recall, for Aristotle nature is an inner principle of change and rest. Natural beings are distinguished by having such an inner principle from other beings which owe their changes to external causes. Since the notion of a principle is articulated in terms of the four causes, Aristotle understands natural beings as those which have within themselves all four causes. Aristotle's view of nature is developed in opposition to a materialist view of nature which takes the material cause to be the sufficient cause of natural phenomena. For Aristotle nature includes not just matter, but final, formal, and efficient causes. A natural philosopher will only have done his job when he has shown all four causes to be at work. In contrast, the materialist, as Aristotle presents him in *DA* I.1, holds that the material cause is sufficient to explain a range of life activities without reference to form. So matter may be viewed on its own as the nature of living beings.

⁵ Plato *Symp.* 207c8–d5: *Εἰ τοίνυν, ἔφη, πιστεύεις ἐκείνου εἶναι φύσει τὸν ἔρωτα, οὐδ' πολλάκις ὠμολογήκαμεν, μὴ θαύμαζε. ἐνταῦθα γὰρ τὸν αὐτὸν ἐκείνῳ λόγον ἢ θνητὴ φύσις ζητεῖ κατὰ τὸ δυνατόν αἰεὶ τε εἶναι καὶ ἀθάνατος. δύναται δὲ ταύτῃ μόνον, τῇ γενέσει, ὅτι αἰεὶ καταλείπει ἕτερον νέον ἀντὶ τοῦ παλαιοῦ, ὅπῃ καὶ ἐν ᾧ ἐν ἑκάστον τῶν ζώων ζῆν καλεῖται καὶ εἶναι τὸ αὐτό.*

This is the view illustrated by the example of a bed in *Phys.* II.1: if you plant a bed what will grow up is not another bed but some more wood, so it is the matter which is the underlying causal principle in the generation of natural beings. Later in *Phys.* II.8 Aristotle discusses a similar view that takes matter, without reference to final causes, to be a sufficient cause of the functional arrangement of natural phenomena such as teeth. The argument of *Phys.* II is consistently concerned with showing how material causes are inadequate to account for natural beings because they ignore the roles played by formal, final, and efficient causes.

Now the fact that the soul is to be studied in the context of natural philosophy has been emphasized, as we have seen, from the beginning of the *DA*. Aristotle advertised the study of the soul by saying that it was of great importance to the study of nature since the soul was like a principle for animals and therefore, it was implied, an important instance of nature. Later in II.1 he offered the common account of the soul as ‘a first fulfilment of *natural* body having life in capacity’, or again as a ‘first fulfilment of a *natural* instrumental body’ which suggested more strongly that that the soul would play a final causal role in relation to the body. ‘Natural’ was shortly afterwards spelt out in terms of ‘having the principle of motion and rest within itself’ (412b16–17). The claim was applied specifically to the nutritive soul in *DA* II.2 when he says of plants that they all seem to live, ‘for they clearly have *within themselves* (*en hautois*) a capacity and principle (*dunamin kai arkhên*) of such a kind, through which they take growth and diminution in opposite places’ (413a25–7).⁶ The soul *qua* nutritive here was seen as a cause of life in plants, in a phrase that clearly recalled the conception of nature as an inner principle of change and rest.

The basic claim that the soul is the nature of living beings in the sense of their inner principle of change and rest has, then, already been established before the discussion of nutrition in *DA* II.4, and it is a claim that has also already been made with specific reference to nutrition. But the articulation of this claim in terms of the four causes, which we would expect from the *Phys.*, is left for II.4. This in itself is noteworthy and has caused some commentators concern. Hicks, for example, viewed the passage from 415b8–416a18, where Aristotle relates the ways in which the soul is a cause, as a ‘digression’. How, he wondered, can II.4 be dedicated to nutrition and also offer a general analysis of how soul works as a cause? If we can answer this question, I submit, we shall have good idea of why Aristotle forefronts nutrition in his psychology.

The account of nutrition in II.4 should be read in extension of the polemic against materialism. It aims to show how the soul is responsible as final, formal, and efficient causes for the most basic and necessary life phenomenon and how, therefore, matter is not sufficient to account for the phenomenon of life. If materialism fails to account for nutrition, then *a fortiori* it fails for the other life functions. For the materialist seems to have a stronger argument in the case of nutrition than in those of the other capacities,

⁶ φαίνεται γὰρ ἐν αὐτοῖς ἔχοντα δύναμιν καὶ ἀρχὴν τοιαύτην, δι’ ἧς αὐξήσιν τε καὶ φθίσειν λαμβάνουσι κατὰ τοὺς ἐναντίους τρόπους.

particularly perception and intellectual thinking. So in Plato's *Timaeus* (80d–81e), a theory is propounded which explains nutrition wholly in terms of the interactions of the constituent material elements, the triangles out of which Timaeus thinks all body is constituted, according to the principle of material necessity that likes moves towards like. Fire plays a special role in this process by cutting up the ingested food. No reference to soul is made in accounting for nutrition, and the process is not subject to teleological necessity.⁷ If Plato, no materialist, can explain nutrition without reference to soul, others might well think that nutrition can be explained as purely bodily process. That is the background against which Aristotle's introduction of a nutritive soul stands out.

Now already in *DA* I.5 Aristotle argues against the materialists' accounts of thinking and perception. Empedocles, to mention one, sought to explain perception on the principle that like is grasped by like, for example, it is by the earth in you that you perceive earth. Aristotle musters a range of objections, but the two to make note of for our purposes are these. First, what is missing from this account is the formal principle, which for Aristotle, first of all the causes, defines the soul in its capacity to take on the perceptible or intelligible form. Second, as he says, the bodily elements are not unified, whereas the soul is a unity and unifying principle of the body.

Now in *DA* II.4 Aristotle particularly refers to Empedocles's theory of nutrition, according to which plants send up shoots because of the lightness of the fire within them, and set roots because of the heaviness of their earthy component. Plant growth is explained exclusively in terms of the properties of the plant's matter; no mention is made of the form of the plant as a whole. Aristotle objects that without a formal principle there is nothing to explain what keeps the plant together, what structures the plant's growth. It is clear that Aristotle's objection is closely parallel to his general objection to Empedocles in *Phys.* II: Empedocles explains the constitution of natural beings the way one might explain a wall by saying that the base is made of earth because it is light and sinks down, while the upper parts are made of wood because it is light and ascends to the top. Such an account patently fails to explain the constitution of the wall because it does not relate the materials to the overall function of the wall: the reason why the materials are placed where they are is to contribute to the function of a wall. In both cases, then, what is lacking is the overall structuring principle which explains why the plant or the wall has the shape it has.⁸

A correlative of the claim that material causes are sufficient to explain the formal outcome of nutrition is the idea that matter also plays the role of efficient cause, as Aristotle understands it. So earth is such as to move down, fire to move up, and

⁷ This point is compatible with the role of the appetitive part of the soul in keeping us alive (*Tim.* 70d–e), since the question is here how nutrition operates. Aristotle does not see nutrition as a function of appetite either.

⁸ If we take the formal principle to make reference to the function of a wall, we can see immediately why Empedocles also fails to provide a final causal account.

therefore the elements of the plant are such as to move its roots down and its shoots up. This is the claim that Aristotle next addresses:

The nature of fire seems to some to be the cause without qualification of nutrition and growth. For in fact this is clearly of all the bodies the only one which is nourished and increased, which is why somebody might think that this is the efficient cause both in plants and in animals. (416a9–13)

Fire on its own burns out of control as long as there is fuel. But nutrition is a regulated process. While fire can be seen as an instrument in nutrition, causal primacy goes to the soul which regulates its burning. The soul is required to impose unity on fire and earth which would otherwise disintegrate. The matter on its own, then, is insufficient to explain how nutrition occurs; this is the job of the formal principle, the soul, which regulates the behaviour of the matter. Aristotle's objections to the materialists' account of nutrition echo his refutation of their account of perception in Book 1.

Aristotle's account of nutrition reads, then, first of all as a rejection of materialism. In the polemic with materialism, Aristotle shows the causal role of the soul as the efficient and formal cause of nutrition. The account of nutrition serves then as a paradigm versus the materialist of how the soul acts as a cause in those ways required for soul to constitute the nature of living bodies.

The argument I have presented can be summed up as follows:

Phys.:

Nature is an inner principle of change and rest.

Living beings have an inner principle of change and rest.

(Indeed, according to *Phys.* VIII.4 only living beings properly have an inner principle of change and rest.)

The inner principle of change and rest is a formal, final cause and efficient cause, not just material (and efficient) cause as claimed by materialists.

DA:

Thesis: The soul is the inner principle of change and rest.

Materialism: matter is the only principle of change and rest of living beings, and thus their only nature.

The soul is the formal, final, and efficient cause of nutrition.

The soul is an inner principle of living beings.

The soul is the nature of living beings.

Therefore, materialism is false.

On this reading, then, nutrition is Aristotle's tool in refuting materialism by showing how the soul is required to explain the most basic kind of life activity as its final, formal, and efficient cause. If the soul as form is responsible for nutrition, and nutrition is the minimal condition of life, then any account of life that does not focus on the soul as the formal cause of life will be mistaken. But that is exactly what the materialists attempted. Aristotle uses nutrition to establish the soul as the causal principle of life activities, rather

as he uses the example of the teeth in *Phys.* II to establish the priority of formal and final explanation over material explanation in nature as a whole. This explains why Aristotle brings up the general causal status of the soul in the context of a chapter specifically devoted to nutrition. It also explains Aristotle's otherwise surprisingly weak formulation that nutrition and perception do not happen without soul. His target is the materialists, who claim that the various life processes do happen without soul, simply by the workings of matter.⁹ It is sufficient to show the necessary contribution of soul in the efficient causation of nutrition and perception to refute the materialist.

This interpretation also, I think, gives us a way of explaining the prominence of nutrition in relation to the common account of the soul in *DA* II.1. Aristotle started this chapter by saying that the soul was substance. The question arose whether it was substance in the sense of form or matter. He claimed that living beings were natural bodies and that such bodies were composites of form and matter. He argued that the soul could not be the body because the body was said to have life and body is not said of anything. It appeared therefore that the soul was substance in the sense of form with the body as its matter. Since matter was potentiality and form fulfilment, either first or second, this claim could also be expressed by saying that the soul was the first fulfilment of a natural body potentially having life. At this point he added that the body was also an instrument and exemplified this claim by reference to the parts of plants:

The parts of plants too are instruments, but completely simple ones, for example the leaf is a cover for the peel, the peel for the fruit; and the roots are analogous to the mouth: for they both draw in food. (412b1–4)

The reason for making reference to plants here is not that Aristotle thinks the common soul is the nutritive soul; it is rather to show that the definition applies even to the minimum case of having soul and therefore *a fortiori* to the other kinds of soul. That's why Aristotle says concessively of the parts of plants 'but completely simple ones', since one might think that complexity is a characteristic of tools. The analogy with the mouths of animals serves to show how *despite* their simplicity, the roots are still related to the soul in fundamentally the same kind of way as the more complex animal parts. Without making the point explicit—that is the job of II.4—there is here an implied final causal explanation in terms of the body being for the sake of the soul, just as a hammer is for the sake of its function, a final causal explanation that of course goes hand in glove with the notion of the soul as the *fulfilment* of the body.

Again in *DA* II.2 nutrition was singled out after Aristotle had made a general claim about the soul: we say that what has soul is distinguished from what hasn't by being alive.

That is why all plants seem to be alive: for they clearly have within themselves such a capacity and principle through which they achieve growth and diminution in opposite directions: for it is not

⁹ Compare Plato's *Timaeus* 37c (with 46d) where a similar materialist opponent is in view.

the case that they grow up but not down, but they grow equally in both directions and all around, those that are always taking nourishment and live their lives to the end, as long as they are able to take nourishment. (DA 413a25–31)

The emphasis here is on explaining the way plants live on the basis of their having a psychic capacity, the capacity to take nourishment. We say that plants are alive, and if the soul is to explain life, then it has as a minimum to explain plant life. And so it does, because the nutritive capacity is a capacity of the soul, not of matter as such. For if it was explained by matter we could not explain why it grows both up and down and all around since the elements tend to move only in one direction. We know the significance of these points from our analysis of DA II.4.

These prominent references to the nutritive soul in the common account of the soul support an *a fortiori* argument of the sort: if it even works for the nutritive soul, then we should expect it to work so much the better for the other kinds of soul. For, as we saw, nutrition is the life phenomenon which seems most likely to be explained by reference solely to the body.

Now when Aristotle says that the generation is the most natural function for living beings I take this to mean that the nutritive soul is a paradigm example for all the different kinds of soul of how the soul works as a final, formal, and efficient cause of the body. It is of course true that by showing the claim that the nutritive soul is the cause of the body he will have shown that the soul is a cause in a way that applies to all living beings, since all living beings have the nutritive soul. But it is also clear that Aristotle in DA II.4 does not want to limit this claim to the nutritive soul: he wants to show it also for other kinds of soul. So he says quite generally that the parts of an animal are the instruments of the soul, showing in this way that the soul is the final cause of the body. So he mentions both the capacity to move spatially and the capacity to perceive in the context of claiming that the soul is the efficient cause of the body, before focusing on the nutritive capacity (415b26–416a18).

However, there are patent difficulties in establishing the other capacities of the soul to be both an efficient, formal, and final cause of the body. In perception, the sense-object acts on the sense-organ *qua* ensouled. The sense-object is here the efficient cause of actual perception. There is, as I shall argue in the next chapter, still a sense in which the perceptual soul can be said to contribute to the efficient causation of perception, but it is a highly qualified one.¹⁰ Moreover, it is a sense we can best appreciate once we have understood the less complicated central case of soul as efficient cause of the nutrition of the body.

Perception is further complicated by the fact that it only counts as a change in a qualified sense. We need to understand the unqualified sense in which change happens before we can appreciate the niceties of perceptual change. Nutrition here serves as

¹⁰ It is this contribution that Aristotle refers to at 415b24–5 by the modest claim that nothing perceives which does not have a soul.

Aristotle's explanatory template for articulating in general terms what change is. Theoretical thought meanwhile is complicated by the fact that there is no organ of thought: it is therefore unclear in what sense if any there is a material side to theoretical thinking, and therefore in what way theoretical thinking falls under the study of nature. Consider also this passage from the *PA* I.1:

However, it is not the case that all soul is an origin [principle, *arkhê*] of change, nor all its parts; rather, of growth the origin is the part which is present even in plants, of alteration the perceptive part, and of locomotion some other part, and not the rational; 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. (641b5–9, transl. Lennox (2001))

While Aristotle does apply his causal analysis to theoretical thinking in the *DA*, by analogy with perception, it seems—as we shall see in Chapter 11—that this account only applies to the passive intellect, not to the active theoretical intellect. It seems then that the cognitive capacities of the soul are much less suited than nutrition to Aristotle's purposes of setting out a paradigm for how the soul acts as a cause of the changes the living body undergoes. There remains locomotion, but Aristotle's worry (415b21–2) that this capacity is too specific to a certain kind of animal to be illustrative of the efficient causal role of the soul clearly favours nutrition as our starting point.

There is a loose end. I have argued that Aristotle uses nutrition because it shows, against the materialists, the soul as working as an inner principle of change and therefore as nature, while it avoids some of the complexities of establishing this claim for the cognitive capacities. However, Aristotle seems to make the claim that the nutritive soul is the most natural of the soul's capacities with particular reference to its contribution to our immortality.

Now in one way it is easy to explain this claim. What does the nutritive soul do? It preserves one as the sort of living being one is; it preserves oneself as an individual *qua* nutritive, and it preserves the sort of thing *qua* generative by producing another thing like oneself. What do all living beings desire? To continue living in whatever way possible. So the nutritive soul does exactly what we all desire as living beings. There is, however, a reductive and non-reductive way of understanding the role of nutritive soul here.¹¹ On the reductive reading, the end of the nutritive soul is the end of all the other capacities of the soul: in that sense the capacities are instrumental in bringing about an end that is most proper to nutrition. This brings up the spectre of the reading we considered earlier according to which the nutritive soul is properly constitutive of the substance of a living being and the other capacities of the soul are established and

¹¹ It looks like there is simpler explanation of this claim than the one I have offered: natural beings are mortal, therefore they can only preserve themselves through generation; therefore it is most natural, that is most in accordance with their nature as mortal, that they seek to reproduce. However, Aristotle does not refer to what is most natural for mortal beings, but what is most natural to living beings. The account I have offered exactly picks up on what is characteristic of their nature as living beings, namely, having an inner principle of change and rest.

maintained in the process of nutrition. On the non-reductive reading, in contrast, nutrition shows the most basic way in which living beings seek to preserve themselves, but there are others, perception and reason included, through which the living being maintains the sort of thing it is. On this view the ends of perception and reason are not subsumed under those of nutrition, but are distinct. However, all ends can in different ways be seen as ways of achieving immortality. So when Aristotle says that ‘all living things desire that [i.e. ‘to participate in the eternal and divine as far as possible’] and do *everything they do* according to nature for the sake of that’ (415b1–2, my emphasis), he means to offer a general description of what living beings aim for when exercising not just nutrition as such but also the cognitive and locomotive capacities. This claim can be supported by Aristotle’s description of the other capacities elsewhere. Locomotion is a way of imitating god: the heavenly bodies move round so as to maintain continuous actuality, while sublunary motions are in imitation of those circular motions (GC II.10).¹² So the locomotion of animals imitates those of the divine and immortal heavenly bodies. Famously in the *Nic. Eth.* X contemplation is for humans a way of being like god. This claim is extended to perception in animals in GA II.1: Perception and intellectual thinking fall under the common genus ‘cognition’ (*gnôsis*) and are nobler and more divine than mere nutrition. What makes this argument work is that imitating the divine means primarily imitating what is best and noblest. Living is better than not living,¹³ so by staying alive living beings imitate the divine; but mere survival is not the best or noblest: perceiving is better than merely being alive, and knowing better than perceiving.¹⁴ So the exercise all of these capacities qualify as ways of imitating the divine as the best. Nutrition is again the minimal and basic way of doing so, but not the only one. What makes the nutritive soul most natural in relation to this end is then not that it has a monopoly on it, but that it realizes this end in a way that is particularly perspicacious: it is just obvious that an animal by having offspring is trying to prolong its existence. As Diotima points out in the *Symposium* (207b, 208b), why else would parents make such extraordinarily sacrifices for their protection?

To conclude, Aristotle’s introduction of the nutritive soul at the forefront of his psychology is an innovation in relation to his predecessors, who tended to explain nutrition materialistically even when they did not explain cognitive processes

¹² ‘The cause of this [perpetuity of coming-to-be], as we have often said, is circular motion; for that is the only motion which is continuous. That, too, is why all the other things—the things, I mean, which are reciprocally transformed in virtue of their “passions” and their “powers of action” e.g. the “simple” bodies imitate circular motion. For when Water is transformed into Air, Air into Fire, and the Fire back into Water, we say the coming-to-be “has completed the circle”, because it reverts again to the beginning. Hence it is by imitating circular motion that rectilinear motion too is continuous.’ (GC 337a1–8; revised Oxford transl.)

¹³ GA II.1 731b30–1.

¹⁴ Cf. also *Metaph.* A.7 1072b14–18: ‘On such a principle, then, depend the heavens and the world of nature. And its life is such as the best which we enjoy, and enjoy but for a short time. For it is ever in this state (which we cannot be), since its activity is also pleasure. (And therefore waking, perception, and thinking are most pleasant, and hopes and memories are so because of their reference to these.)’ (after revised Oxford transl.).

materialistically. This materialistic background, I have tried to show, is strongly present in Aristotle's account of the soul: he is continually aware that he is redrawing the map of the soul in a way that requires him to show how nutrition matches his account of the soul in its essential characteristics. Nutrition has appeared as Aristotle's star example of the soul working as nature in the sense of the final, formal, and efficient causes. But, as we shall see when we look more closely at soul as the efficient cause in the next chapter, even here matters are not so simple.

The Soul as an Efficient Cause

For Aristotle living beings are natural beings and they are to be explained as such. So in *DA* I.1 he recommends that we approach the soul *physikôs* in the manner of the natural philosopher. Since natural beings are composites of form and matter, studying living beings as natural beings means studying them as composites of form and matter. Aristotle's 'most common account' of the soul is accordingly that of the natural philosopher: the soul is 'substance in the sense of the form of a natural body potentially having life' (*DA* II.1 412a19–21). Soul, then, stands to body as form to matter.

Because living beings are composites of form and matter they are subject to change. However, as we learn in *Phys.* II, natural substances are not simply subject to change. They also determine some of their own changes, for they have within themselves principles (*arkhai*) of change and rest. It is this feature that sets them apart from other composite substances such as artefacts. The inner principle by which plants change themselves is thus a nutritive capacity, whereas for other living beings the inner principles include also other capacities for perception, locomotion or thinking.¹

We have here an application of the *Phys.*'s notion of nature as an inner principle of change: for living beings the soul is an inner principle of change. What makes living beings *natural* is that they have such an inner principle of change. What makes them *living* is that for them their inner principle is a soul or part of a soul: to be a living being is to have an inner principle of change and rest, where that inner principle does at least one of the things that only souls do. It is worth stressing that where Aristotle's naturalism about the soul properly begins is not with the claim that living beings are composites of form and matter, nor with the claim that living beings are subject to change, but with the claim that they have within themselves an inner principle of change and rest and that the soul serves as such a principle.²

¹ *DA* 413a33–b2: οὐδεμία γὰρ αὐτοῖς δύναμις ἄλλη ψυχῆς. τὸ μὲν οὖν ζῆν διὰ τὴν ἀρχὴν ταύτην ὑπάρχει τοῖς ζώσι, τὸ δὲ ζῶον διὰ τὴν αἴσθησιν πρώτως.

² This point was brought out particularly well by the passage quoted above from the *PA* I.1: 'However, it is not the case that all soul is an origin [principle, *arkhê*] of change, nor all its parts; rather, of growth the origin is the part which is present even in plants, of alteration the perceptive part, and of locomotion some other part, and not the rational; 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' (641b5–9, transl. Lennox (2001)).

Natural beings have an inner principle of change; artefacts do not. Aristotle reminds us of the point in *DA* II.1. He has himself used the analogy of an axe to illuminate the relationship between form and matter in living beings. But he then added that the soul is not the formula (*logos*) of *such* a body, that is the body of an artefact, but rather of a *natural* body, which, he says, is a body 'having a principle (*arkhê*) of change and rest in itself' (412b15–17). Soon afterwards, it emerges that he understands such principles as capacities (*dunameis*) for change. So he says of plants that they all seem to live, 'for they clearly have within themselves (*en hautois*) a capacity and principle (*dunamin kai arkhên*) of such a kind, through which they take growth and diminution in opposite places' (413a25–7).³

In the *Phys.* II.3 Aristotle gave a fuller explanation of the difference between natural beings and artefacts in terms of the 'four causes'. To be a natural being is to have a principle of change within oneself not only as the material cause is a principle of change but also as the formal, final and efficient causes are principles of changes. All material beings have *qua* material the potential for change in Aristotle's universe. So a slab of marble has the potential for change, the potential to be turned into, say, a statue or a bench. For this potential to be realized, however, the marble requires an efficient cause, an artist, say, who brings to bear the form of statue on the materials. For artefacts the efficient cause is external. That is why no slab of marble left to its own devices will ever, except by accident, become a statue. Natural beings are different: they are able to initiate changes to themselves because, it seems, they have the efficient cause within themselves. For it is the efficient cause that sets things moving. It is responsible for actualizing the potential of any given matter to have such and such a form. Aristotle thus refers to the efficient cause not just as 'that from which the change originates' but also as 'that which moves' and 'that which produces the actuality or activity (*energeia*)'.⁴ When we are asked why this slab of marble was turned into a statue, whereas that slab was not, given that both had the potential, we appropriately point to the efficient cause, the sculptor who initiated a change in the one slab but not in the other. The main reason why natural beings are capable of initiating their own changes but artefacts are not seems to be the fact that natural beings have the efficient cause within themselves. Note, however, that the efficient cause is capable of actualizing the potentiality of the matter to have a certain form because it already itself has that form.⁵ In this way, having the efficient cause within oneself also points to having the formal cause within oneself.

However, we also know from *Phys.* VIII.4–6 that the claim that natural beings initiate their own changes has to be qualified in view of their dependence on the

³ φαίνεται γὰρ ἐν αὐτοῖς ἔχοντα δύναμιν καὶ ἀρχὴν τοιαύτην, δι' ἧς αὐξήσιν τε καὶ φθίωσιν λαμβάνουσι κατὰ τοὺς ἐναντίους τόπους.

⁴ Cf. e.g. *Phys.* 194b29–32, *APo* 94b7–8, *GA* 778b1, *DA* 417b20.

⁵ Cf. *Phys.* VIII.5 257b6–10: ἔτι διώρισται ὅτι κινεῖται τὸ κινητόν· τοῦτο δ' ἐστὶν δυνάμει κινούμενον, οὐκ ἐντελεχεία, τὸ δὲ δυνάμει εἰς ἐντελέθειαν βαδίζει, ἔστιν δ' ἡ κίνησις ἐντελέχεια κινήτου ἀτελούς. τὸ δὲ κινούν ἡδὴ ἐνέργεια ἔστιν, οἷον θερμαίνει τὸ θερμόν καὶ ὅλως γεννᾷ τὸ ἔχον τὸ εἶδος.

environment. In these chapters, Aristotle argues that everything that is changed is changed by something. But if natural beings are able to initiate their own changes, do they change without being changed by something? Aristotle, in response, clarifies how natural beings are changed. He distinguishes between two kinds of natural being: living beings such as animals and other natural beings such as fire and earth. The motions of both kinds of natural being are, indeed, caused by something, but in the case of living beings the moving cause is internal whereas in the simple bodies it is external. In animals 'that which causes motion is separate from that which suffers motion, and in this way the animal as a whole causes its own motion' (254b31–2). The simplicity of the simple bodies, in contrast, does not allow for a distinction within them between a moving and a moved part, and so they cannot initiate their own motions. However, we are still free to think of the motions of the simple bodies by an external cause as natural to them, if it makes them actually what they are potentially (255a28–30). For instance, it may require a push for a stone to move down, but the motion still counts as natural because stones as heavy naturally tend to move downwards.

At the end of *Phys.* VIII.4 we may feel entitled to conclude that even if the simple bodies are not really self-movers, at least living beings are. However, in *Phys.* VIII.6 Aristotle seems to go back even on this. For here he maintains not just that everything that moves is moved by something, but also that it is moved by something *other than it*. Or more precisely, he claims that the motion of all perishables is caused by something else. His motive for making this claim is that he wants to show that the continuous and eternal motion amongst the perishables requires the existence of something imperishable which always and continuously causes motion without itself being moved.⁶ But Aristotle now (259b3–6) faces the objection that, by his own account, living beings are capable of moving themselves, without, it seems, being moved by others. So perhaps we do not, after all, need a first unmoved mover to guarantee the continued motion of perishables? In reply, Aristotle denies that animals strictly speaking move themselves:⁷

We must understand that animals change themselves with respect to only one change [*sc.* locomotion], and even this one not strictly. For the cause is not from (*ex*) the animal itself. Rather, there are other changes natural to animals according to which they are not changed through themselves (*dia hautón*), such as growth, diminution, and respiration, according to which each of the animals is changed when it is at rest and not being changed according to a change by itself. The cause of this is the environment and many of the things entering from without. Thus in some cases the cause is nourishment—when it is being digested animals sleep, and when it is

⁶ GC I.3 318a2–8 makes it explicit that Aristotle takes this argument specifically to concern the efficient causation of motion.

⁷ I fail to see why Graham (1999) 112–15 thinks the argument could be clarified through the distinction between voluntary and involuntary action. The contrast that is relevant for the overall argument is clearly that between changes initiated by oneself and those initiated by external factors or, put differently, between those changes where the actualizing or efficient cause lies within oneself and those where it lies outside of oneself. Voluntary actions would form only a small subset of those changes that one initiates oneself, and would properly only apply to humans, whereas Aristotle begins the passage quoted by referring to the motions of *animals*. In fairness to Graham, it should be said that he offers this reading as only one option.

being distributed they awake and move themselves, the first principle being external. Therefore animals are not always being changed continuously by themselves. (*Phys.* VIII.6 259b6–15)⁸

Aristotle appears to be saying here that locomotion is not strictly speaking a case of self-motion since locomotion is triggered by other changes in which the animal is passive, that is in which the animal does not initiate the change. So when the food enters from without it sets off digestion which puts the animal to sleep, a state that continues until the food has been digested. The efficient cause, the ‘the first principle of motion’, of the nutritive changes is thus external and since the nutritive changes make us stop and start moving the efficient cause of locomotion in this case also counts as external.

Read in this way, however, this passage clashes not just with *DA* II.4’s claim that the soul is the efficient cause but also with another passage in *GC* I.5 where Aristotle is explicit that the efficient cause of nutrition (including growth) is not the food but the nourished living being:

Flesh is said to have been altered if, while it remains flesh and its essence remains, there is present some *per se* affection which was not there before; on the other hand, that whereby [*hōi*: dative] it has been altered has sometimes not been affected, though sometimes that too has been affected. But what does the altering and the principle of the change is in what grows and what is being altered, for what does the changing is in these things . . . but this [*sc.* the food] having undergone the change has passed away and what does the changing is not in it. (321b2–10)⁹

Aristotle could hardly be clearer that he takes the efficient cause in nutrition to be found in the living being and not in the food. It seems, then, that if Aristotle in *Phys.* VIII.6 meant to use nutrition as an example of changes of which animals are not the efficient cause, then he is adopting a position which undermines his own claims both in the *GC* and, most worryingly for us, in the *DA*. I suggest therefore that we return to the *Phys.* passage to see if another reading is possible.

Let us begin by pointing to some terminological distinctions that Aristotle himself carefully sets up in *Phys.* VIII.6. Given that all things that move are moved by something, he distinguished between (a) what is not moved because of itself (*di’ hauto*) and (b) what is moved because of itself. Group (b), in turn, allows for a distinction between (i) what is moved because of itself immediately and (ii) through several things (*dia pleionōn*), like the stone which is moved by (*kineitai hypo*) the stick

⁸ τοῦτο δὲ δεῖ λαβεῖν, ὅτι μίαν κίνησιν αὐτὰ κινεῖ, καὶ ὅτι ταύτην οὐ κυρίως· οὐ γὰρ ἐξ αὐτοῦ τὸ αἴτιον, ἀλλ’ ἐνεῖσιν ἄλλαι κινήσεις φυσικαὶ τοῖς ζώοις, ἃς οὐ κινεῖται δι’ αὐτῶν, οἷον αὔξησης φθίσεως ἀναπνοῆς, ἃς κινεῖται τῶν ζώων ἑκαστον ἡρεμοῦν καὶ οὐ κινούμενον τὴν ὑφ’ αὐτοῦ κίνησιν. τούτου δ’ αἴτιον τὸ περιέχον καὶ πολλὰ τῶν εἰσιόντων, οἷον ἐνίων ἢ τροφή· πεπτομένης μὲν γὰρ καθεύδουσιν, διακρινομένης δ’ ἐγείρονται καὶ κινεῖται ἑαυτούς, τῆς πρώτης ἀρχῆς ἕξωθεν οὕσης, διὸ οὐκ ἀεὶ κινεῖται συνεχῶς ὑφ’ αὐτῶν. The passage as a whole responds to *Phys.* VIII.2 253a8–21. On the relationship between the two passages, cf. Furley (1994) 6–7 and Morison (2004).

⁹ . . . εἰ μένει σὰρξ οὖσα καὶ τὸ τί ἐστι, πάθος δέ τι ὑπάρχει τῶν καθ’ αὐτό, ὃ πρότερον οὐχ ὑπῆρχεν, ἡλλοίωται τοῦτο· ᾧ δ’ ἡλλοίωται, ὅτε μὲν οὐδὲν πέπονθεν, ὅτε δὲ κακείνο. ἀλλὰ τὸ ἡλλοιοῦν καὶ ἡ ἀρχὴ τῆς κινήσεως ἐν τῷ αὐξανομένῳ καὶ τῷ ἡλλοιουμένῳ· ἐν τούτοις γὰρ τὸ κινεῖν, . . . ἀλλ’ ἐφθαρτὰ γε τοῦτο παθόν, καὶ τὸ κινεῖν οὐκ ἐν τούτῳ.

which is moved by the man.¹⁰ Aristotle also expresses the same notion of instrumentality by means of the dative: the man moves the stone with the stick (*tēi baktēriai*).¹¹

With these distinctions in hand let us return to our passage in Chapter 6. It now appears significant that nutrition is here used to illustrate changes that are ‘not *through* the animals themselves’ (*dia* with the genitive). For, as we now know, this does not mean that nutrition does not happen ‘*because of* the animals themselves’ (*dia* with the accusative).¹² It means that nutrition happens by means of an instrument. So Aristotle is not denying that nutrition is a case of self-motion, only that it is a case of self-motion by means of the animal itself. For nutrition happens by means of something external, food. We can compare the food with the stick in the example: the nutrition happens through or with the food, much as hitting the stone happens through or with the stick. However, the difference is that the instrument of nutrition acts on the animal itself rather than on some external object, like the stone. To understand better how the animal moves itself by means of the food we need to bring in Aristotle’s distinction between the soul and the body, as does Aristotle himself in the following lines:

For the mover is distinct (*allo*), and it is itself moved and causes change by interacting with each self-mover. In all these cases the first mover and cause of the thing moving itself is moved by itself, but accidentally. For the body changes place, so that what is in the body also changes place, moving itself through leverage. (*Phys.* 259b15–20, transl. after D. Graham)¹³

Aristotle here continues to call the animal a ‘self-mover’ and the soul the ‘first mover’, notwithstanding the reference in the previous sentence to the food as ‘the first principle’. ‘The mover’ referred to here as ‘distinct’, that is distinct from the self-mover, I take to be the food, which not only changes but is also changed in nutrition. The soul, meanwhile, is not moved, except accidentally, insofar as it is in the body, which is moved.¹⁴ Animal motion counts as self-motion even when the animal is

¹⁰ *Phys.* 256a4–10: τοῦτο [i.e. that all things that move are moved by something] δὲ διχῶς· ἡ γὰρ οὐ δι’ αὐτὸ τὸ κινεῖν, ἀλλὰ δι’ ἕτερον ὃ κινεῖ τὸ κινεῖν, ἡ δὲ αὐτὸ, καὶ τοῦτο ἡ πρῶτον μετὰ τὸ ἔσχατον ἢ διὰ πλειόνων, οἷον ἡ βακτηρία κινεῖ τὸν λίθον καὶ κινεῖται ὑπὸ τῆς χειρὸς κινουμένης ὑπὸ τοῦ ἀνθρώπου, οὗτος δ’ οὐκέτι τῷ ὑπ’ ἄλλου κινεῖσθαι. ἄμφω δὲ κινεῖν φαμέν, καὶ τὸ τελευταῖον καὶ τὸ πρῶτον τῶν κινούντων, ἀλλὰ μᾶλλον τὸ πρῶτον.

¹¹ *Phys.* 256a22–5: πάν γὰρ τὸ κινεῖν τί τε κινεῖ καὶ τινί. ἡ γὰρ αὐτῷ κινεῖ τὸ κινεῖν ἢ ἄλλω, οἷον ἄνθρωπος ἡ αὐτὸς ἢ τῇ βακτηρίᾳ, καὶ ὁ ἄνεμος κατέβαλεν ἢ αὐτὸς ἢ ὁ λίθος ὃν ἔωσεν.

¹² Contrast Furley’s translation: ‘but there are other natural motions in animals, which they do not have *because of* themselves’, Furley (1994) 6 (my emphasis).

¹³ ἄλλο γὰρ τὸ κινεῖν, αὐτὸ κινούμενον καὶ μεταβάλλον πρὸς ἕκαστον τῶν κινούντων ἑαυτά. ἐν πᾶσι δὲ τούτοις κινεῖται τὸ κινεῖν πρῶτον καὶ τὸ αἴτιον τοῦ αὐτοῦ ἑαυτὸ κινεῖν ὕψ’ αὐτοῦ, κατὰ συμβεβηκὸς μέντοι μεταβάλλει γὰρ τὸν τόπον τὸ σῶμα, ὥστε καὶ τὸ ἐν τῷ σώματι ὄν καὶ τῇ μοχλείᾳ κινεῖν ἑαυτό. ‘Interacting’ may be a slight over-translation on Graham’s part but it brings out clearly the message of the passage that the food in affecting the animal is also changed by the animal.

¹⁴ The focus on locomotion here might suggest an alternative reading whereby it is only with respect to locomotion that the animal remains a self-mover. The nutritive changes would then be entirely passive with the food as their first mover, with the soul as the first mover at the point where those nutritive changes ceased to impede locomotion. However, this makes for a strained reading of the quoted lines. Taking ‘each self-mover’ and again ‘the thing moving itself’ to refer to the animal, the mover that is ‘distinct’ (*allo*) can only be something external to the animal, which in the context is most naturally read as the first external principle

affected by external factors such as food, first, because the living being also in these motions moves the food which moves the body,¹⁵ and, second, because it is only the body that is properly speaking moved by the food, while the soul is only moved accidentally insofar as it is in a body which is moved.

As an illustrative comparison one might use the case of my hitting a tennis ball moving towards me. The ball moves towards me, I swing my racket, make contact with the ball, and send it towards my target. The motion of the ball coming towards me is here first in the sequence of events in the sense that it precedes the motion of my racket: I respond to it. However, the motion of my racket is not caused by it, but by me, and the outcome, my sending the ball towards its target, is the result of the impact of the motions of my racket on the motions of the ball. My hitting the target thus presupposes the prior motion of the ball but it is the motion of my racket which makes it hit the target. Similarly, we might say that the motion of the food, as it enters the body (cf. *polla tón eisíontón*, *Phys.* 259b11–12), precedes my digesting it, but it is the action of my nutritive soul on the food that makes it nourish the body. If this is right, we may read ‘first’ in a temporal way when Aristotle says that the first principle of the change leading to the cessation and resumption of locomotion is external. The ingestion of the food (like the oncoming tennis ball) clearly precedes my digestion of it, and any subsequent changes, but it is what the soul does to the food that makes the change to it in digestion and consequently the change in the body.¹⁶ The motion of the food may be temporally first but the motion brought about by the soul is first in terms of the efficient causation of nutrition, imposing its form on the food in digestion so that it may nourish the body.

This interpretation of the passage as a whole differs significantly from our first reading: it presents an interactive picture of the changes in nutrition as being caused both by external factors and by the soul. However, the primary agency clearly remains with the soul rather than the food: for whilst the food both changes and is changed, the soul remains the ‘first mover’ and is essentially unchanged.¹⁷ This conclusion is the one

mentioned in the previous sentence, that is the food. But then when we are told that this distinct mover is itself changed and is changed by each self-mover, it is most natural to take the movement referred to as that of nutrition, in which the food whilst acting on the self-mover is also, as we have just been told, digested and distributed around the body. That the body as a consequence of nutrition also changes place is of course the point that Aristotle seeks to establish, so for him to go on to say ‘for the body changes place, etc.’ is to be expected.

¹⁵ Cf. *DA* I.3 405b31–406a12.

¹⁶ Sleep and awakening happen, after all, as a result of what the organism does with the food, digesting and distributing it in the body (cf. the passives *πετρομένης* and *διακρινωμένης* 259b13–14). Graham (1999) 114 aptly notes, ‘The fact that some factor from outside the animal plays a role in the animal’s behaviour does not by itself prove that the related behaviour is not self-caused. A robin eats a worm, becomes drowsy, and sleeps. It is true (assuming Aristotle’s account of sleep) that without the worm the robin would not have slept. But we must also consider the contribution that the robin’s digestive system makes; we could put the same worm in the stomach of a herbivorous animal, and that animal would not go to sleep.’

¹⁷ Notice also that this ‘interactive interpretation’ fits much better than the first reading with Aristotle’s other example at *Phys.* VIII.6 259b9, respiration. *Iuv.* 27 (21) 480a17–12 makes it clear that the inhalation of

Aristotle needs for his overall argument in *Phys.* VIII. On the one hand, it shows that animals are not absolutely (*kuriōs*) self-movers, but require for their continued motion the temporarily prior agency of external movers, and ultimately the first unmoved mover. On the other hand, however, the conclusion maintains a clear sense in which animals are self-movers, and a sense in which the simple bodies are not, exactly because animals in these motions display the distinction between a moving part, the soul, and a moved part, the body, and because the soul remains unmoved, except accidentally, in the motions whereby the animal is nourished.

In the *GC*, as we saw, Aristotle says that the moving cause of nutrition lies in the living being. Whilst he does not call the food ‘a cause’ of nutrition, he does use the instrumental dative (321b5) for the role of the food, the same construction that we saw Aristotle use in the *Phys.* VIII.5 for the stick by which the man hit the stone. If we take it that the food both acts on the body and is acted on by the soul in nutrition it seems possible to make the two works consistent. There remains a difference of emphasis between the two texts: in *Phys.* VIII.6 Aristotle puts the emphasis on the agency of food in nutrition because his overall argument requires him to show the way in which locomotion depends on changes initiated by the environment. However, the interactive reading suggested that this point was compatible with ascribing to the soul the role of first mover in nutrition and subsequent spatial motions. I want to argue now that Aristotle’s account of nutrition in the *DA* gives us a more nuanced version of the interactive picture I have suggested for *Phys.* VIII.6.¹⁸

The Nutritive Soul as an Efficient Cause in the *DA*

Here in brief is what Aristotle has to say about the efficient causation of nutrition in *DA* II.4. Nutrition, like change in general, is a case of one thing being acted on by another such as to become like it, having previously been unlike it. In nutrition ‘what is nourished’ (*to trephomenon*) first acts on the food so as to make it like itself.¹⁹ The change is all in the food. What is nourished changes no more than does the builder

air is caused by the expansions of the animal’s lungs, which in turn allows the cold air to cool down the animal’s internal heat.

¹⁸ Anybody writing on this topic has the benefit of Gill and Lennox (1994). Many of the articles in this illuminating volume, beginning with D. Furley’s classic ‘Self-Movers’, take their starting point in the problems posed by *Phys.* VIII for the claim that living beings are self-movers. Perception and intellectual thinking receive extensive treatment from the contributors. However, it is noticeable that none of the papers discusses Aristotle’s account of nutrition in the *DA* in any detail, despite the fact that Aristotle’s prime example in *Phys.* VIII.6 of an apparently passive change is nutrition. M. L. Gill (1994) ‘Aristotle on Self-Motion’, 21–2, has a paragraph on the efficient causation of nutrition in *DA* II.4, which, however, only discusses the relationship between the soul and the inner heat, and not that between the soul and the nutriment.

¹⁹ *ἔτι πάσχει τι ἢ τροφή ὑπὸ τοῦ τρεφομένου ἀλλ’ οὐ τοῦτο ὑπὸ τῆς τροφῆς, ὥσπερ οὐδ’ ὁ τέκτων ὑπὸ τῆς ὕλης, ἀλλ’ ὑπ’ ἐκείνου αὐτῇ· ὁ δὲ τέκτων μεταβάλλει μόνον εἰς ἐνέργειαν ἐξ ἄργίας.* (416a34–b3)

when he builds; there is merely a switch from inactivity to activity in what is nourished. The efficient cause of nutrition is thus ‘what is nourished’ and not the food.

The body is nourished *qua* ensouled. It is *qua* ensouled, then, that the living body acts as an efficient cause on the nutriment. This formulation allows for a more nuanced picture of the efficient causation of nutrition. For, on the one hand, it is body *qua* ensouled which—by means of our natural heat—digests the food. This preserves the claim made earlier in the chapter that the soul is the efficient cause of nutrition. On the other hand, the ensouled body may *qua* body also be said to be acted on in nutrition: it is nourished by the soul. The ensouled body, then, acts *qua* ensouled on itself *qua* body so as to nourish itself. More precisely (416b20–3),²⁰ the soul is what nourishes (*to trephon*) and the body what is nourished (*to trephomenon*).

Where does this leave the nutriment (*hê trophê*)? Aristotle uses the language of instrumentality to describe the nutriment. It is that by which the body is nourished (*hôi trephetai*) and later (416b25) it is that by which the soul nourishes the body (*hôi trephei*). The latter expression Aristotle says is used in two ways, comparable to the hand and the rudder on a ship, the hand moving whilst being moved, the rudder simply being moved. He suggests that the hand is like the natural heat, changed by the soul and in turn changing the food, whereas the food is like the rudder being changed, whilst not itself changing another thing. This again makes the nutriment look entirely passive. However, what Aristotle describes here is specifically the process of digestion (*pepsis*), the process that leads up to the body’s assimilation of the final nutriment. He is, in other words, not concerned with the entire nutritive process.²¹ For at *DA* II.4 416b3–7 Aristotle distinguished between the undigested first nutriment and the digested nutriment which is the final thing that is added to the body (*to teleutaion prosginomenon*, 416b3).²² We may take it that the first nutriment is passive in the process of digestion, being moved by the natural heat without moving anything else in turn. This nutriment seems to play the role of matter in nutrition.²³

The imputation of agency to the nutriment at 416b11–17 makes best sense as referring to the final nutriment, which serves not just as matter but also as an instrument of nutrition. The sense of agency appears when the food is referred to as ‘capable of producing growth’ (*auxêtikon*, 416b13) insofar as the ensouled body is a certain quantity (*poson ti*), while insofar as the ensouled body is ‘a certain kind of thing or substance’ (*tode ti kai ousia*, 416b13), the nutriment qualifies as nutriment (*trophê*). In its capacity of nutriment, the food is referred to as ‘saving’ the substance of what is

²⁰ Albeit not entirely precise, cf. 416b30. Burnyeat’s warning (2002) 51–3, about the interim status of the discussion of perception in *DA* II.5, applies also to the discussion of nutrition in *DA* II.4.

²¹ Similarly, the moving of the rudder is hardly the end of the causal process, for the rudder moves the ship, which is surely the proper end of the entire process!

²² πότερον δ’ ἐστὶν ἡ τροφή τὸ τελευταῖον προσγινόμενον ἢ τὸ πρῶτον, ἔχει διαφοράν. εἰ δ’ ἄμφω, ἀλλ’ ἡ μὲν ἀπεπτος ἢ δὲ πεπεμμένη, ἀμφοτέρως ἂν ἐνδέχαιτο τὴν τροφήν λέγειν· ἡ μὲν γὰρ ἀπεπτος, τὸ ἐναντίον τῷ ἐναντίῳ τρέφεται, ἡ δὲ πεπεμμένη, τὸ ὅμοιον τῷ ὁμοίῳ.

²³ A view supported by the craftsman analogy at 416a34–b3, in particular ὥσπερ οὐδ’ ὁ τέκτων ὑπὸ τῆς ὕλης...

nourished, whilst in generation Aristotle says that it is ‘capable of producing generation’ (*genesêôs poiêtikon*, 416b15), that is, capable of producing another substance like the one nourished.²⁴ The view of the food as in some sense active in growth and nutrition fits better if we think of the final nutriment. For the final nutriment may be thought of as acting on the body as the final step in the efficient causation of nutrition, as the last instrument that the soul uses in nourishing the body.²⁵ Finally, Aristotle says at 416b17–19 that the nutriment furnishes (*paraskeuazei*) the nutritive capacity with the activity of saving the living body. Here again a reference to the final nutriment seems more appropriate since it is only insofar as the food has been digested and is added to our bodies that it contributes to our survival.²⁶

Where does this account leave us with respect to the argument of *Phys.* VIII.6? The account clearly confirms the causal efficacy of the soul in nutrition. But does it do so to such an extent as to undermine Aristotle’s suggestion in *Phys.* VIII.6 that the nutriment moves the living being? Not on the interactive reading I suggested for *Phys.* VIII.6. On this reading the soul acted on the body in nutrition by the agency of the food, which was thereby both moving and moved. The food was thus understood as the instrument by which or through which the soul nourishes the body, along the lines of the example of the man moving the stone by means of the stick in *Phys.* VIII.5. *DA* II.4 similarly presented the nutriment as ‘that by which’ the soul nourishes the body. It seems appropriate, indeed, to understand Aristotle’s three-fold distinctions in *DA* II.4 between the soul as ‘what nourishes’, the body as ‘what is nourished’ and the food as ‘that by which the body is nourished’, as a direct application of Aristotle’s three-fold scheme in *Phys.* VIII.5 of the mover, the moved, and the means by which the mover moves. The account of nutrition in *DA* II.4 thus left room for ascribing a kind of causal efficacy to the nutriment as an instrument used by the soul to act on the body.

I argued, furthermore, that when ascribing instrumental agency to the nutriment particularly, Aristotle had in mind the final nutriment. To be sure, it was hardly nutriment in the sense of final nutriment that Aristotle had in mind when talking

²⁴ The suggestion that the food somehow produces change or rest in the nourished body is echoed by the *Sens.*, which identifies specific causal properties in the food (heat and sweetness) as responsible for growth and nutrition: ‘Now, among the perceptible elements of the food which animals assimilate (*προσφερομένης*), the tangible produce (*ποιοῦντα*) growth and decay; it is *qua* hot or cold that the food assimilated (*προσφερόμενον*) produces (*ποιεῖ*) these; for heat and cold produce growth and decay. It is *qua* tastable, however, that the assimilated (*προσφερόμενον*) food nourishes. For all organisms are nourished by the sweet, either in simple state or in a mixture.’ (*Sens.* 4, 441b27–424a3, Oxford revised transl.)

²⁵ In his commentary on 416b25–9 Ross seems right to say that the food, as ‘that by which the body is nourished’, has to be the same as one of the things ‘by which the soul nourishes’. It is less clear, however, given that Aristotle has said now that the food is only moved, how he can also mean to say that the nutritive soul, as Ross puts it, ‘acts on the food... and in turn the food acts on τὸ τρεφόμενον, i.e. on the body (I.22)’ (my italics). My suggestion is that the first nutriment is passive in the digestive part of the nutritive process, yet the final nutriment can also be seen as acting instrumentally in maintaining the body. On this reading, we can preserve the impression given by ὃ τρέφεται that the food in some sense affects the body.

²⁶ The verb *παρασκευάζω* is naturally used of the role of an instrument, cf. *MA* 702a17: τὰ μὲν γὰρ ὀργανικὰ μέρη παρασκευάζει ἐπιτηδείως τὰ πάθη...

about the first external mover in *Phys.* VIII.6. But this difference is at least partly explicable by the fact that Aristotle in *Phys.* VIII.6 was not so much interested in nutrition as such but in a byproduct of nutrition, the cessation and resumption of locomotion, which is not clearly related to the formal changes that the food undergoes in digestion from first to final nutriment.²⁷ Insofar as we worry about whether the account of nutrition in *DA* II.4 presents the living being as too much of a self-mover for the liking of Aristotle in *Phys.* VIII.6, the point seems worth making that the nutriment has some instrumental agency *also* in *DA* II.4, even if it is only that of the final nutriment. On the other hand, insofar as we worry that the ascription of any efficacy to the nutriment is too much from the point of view of the *GC*, we may point out that the agency is only as an instrument and therefore not strictly as a first moving cause, a role reserved for the soul. Moreover, the instrumental agency was primarily that of the *final* nutriment, which has already been affected by the soul in the manner suggested by the *GC*. In *DA* II.4, then, we seem to have a version of the interactive picture of the efficient causation of nutrition, which goes a considerable way towards relaxing the tension between the *Phys.* and the *GC*.

The Soul and the Efficient Cause of Perception

The account of nutrition ultimately bears out Aristotle's general claim in *DA* II.4 that the soul is a moving cause of the activities of the living body. Perception, however, appears to be an exception to the general claim. In *DA* I.3 Aristotle says that 'if the soul is moved, the most plausible view is that it is moved by the sensible objects' (406b10–11). What makes this view 'the most plausible' is no doubt Aristotle's own belief that the animal is somehow affected in perception by the sense-objects. Again, in *DA* II.5 Aristotle is explicit that the sense-objects produce the activity of perception. There seems little initial hope, then, for any argument to the effect that the soul is the efficient cause of perception. Nonetheless, I shall suggest that even in the case of perception we can see the soul involved alongside the sense-objects as an efficient cause in a manner that allows for the general claim to also apply, in a suitably qualified way, to perception.²⁸

Two differences from nutrition stand out immediately when we turn to perception in *DA* II.5. One is that perception is a kind of alteration, that is, a change of quality, whereas growth and nutrition were changes in the categories of quantity and substance

²⁷ At *Phys.* 259b12–13 we are told that locomotion ceases when the food is digested and restarts when the food is being distributed. This may be an echo of the distinction between the first and final nutriment, but we are given no indication what it is about the different stages of *food* that would cause sleep and awakening. For an account of how food relates to the processes that bring about sleep and awakening we have to wait until *Somn.* 3.

²⁸ As Klaus Corcilius pointed out to me, the perceptual capacity is an efficient cause of *phantasia* and animal locomotion, as we shall also see in Chapters 10 and 12. My concern in this chapter, however, is with the question whether the soul, and in particular the perceptual capacity, can be seen as the efficient cause of perception proper, which I take to be Aristotle's primary concern at *DA* II.4 415b21–8.

respectively. Another is that whereas the nutritive soul was described as active in relation to its proper object, making the nutriment like the nourished body, the perceptual part is said to be passive in relation to its proper object, the sense-objects, suffering (*paskhein*) in perception so as to become like the sense-object.²⁹ Later in the chapter (417b19–21) Aristotle seems explicitly to identify the sense-objects as the efficient causes of the activity of perception by calling them ‘the producers of the activity’ (*ta poiêtika tês energeias*).

Perception, then, is a passive change in the perceiver caused by an external efficient cause, the sense-object. This claim seems to rule out that the soul is also the efficient cause of perception. But if so, perception also fails to exemplify Aristotle’s general claim in *DA* II.4 that the soul is the cause of the changes of living bodies as their final, formal, and efficient cause. I want to resist this conclusion, however, by focusing on two points: first, that the nutritive soul is responsible for developing the capacity to perceive, where having this capacity is understood as in a way already perceiving; second, that the sensory capacity given the high level to which it is already informed by the sense-object prior to perception can reasonably be seen as contributing to the activity of perception. Neither point undermines taking the perceptual object as the primary efficient cause of the activity of perception, but they both assign contributing roles to the soul, and so support Aristotle’s modestly phrased claim in *DA* II.4 that the soul is the efficient cause of perception in that ‘nothing perceives which does not have soul’ (415b24–5).

In *DA* II.5 Aristotle, as we have seen, distinguishes between two kinds of alteration. It is one thing to undergo the sort of change that the child experiences when he learns arithmetic. It is another thing to change into being active with respect to knowledge that you already have, in the manner of the working mathematician. From these examples, Aristotle generalizes:

Being affected is not a simple thing, but in one case it is a kind of destruction by the opposite, and in the other it is rather a preservation by what is in actuality of what is in capacity and is in capacity thus as a capacity is to activity. For what has the knowledge comes to be contemplating (*theôroun*), something which is either not being altered (for the transition is into itself and into a fulfilment)³⁰ or another kind of alteration. (417b2–7)³¹

Having distinguished between the alteration from first to second potentiality and that from second potentiality to actuality, Aristotle goes on to make further distinctions. Not only is actual thinking not an ordinary alteration, an ‘o-change’, as I call it, neither

²⁹ *DA* II.5 416b33–5: ἡ δ’ αἴσθησις ἐν τῷ κινεῖσθαι τε καὶ πάσχειν συμβαίνει, καθάπερ εἴρηται· δοκεῖ γὰρ ἀλλοίωσις τις εἶναι.

³⁰ I take it as no accident that Aristotle uses the word *entelekheia* here: contemplation is the state in which knowledge has reached its end.

³¹ Οὐκ ἐστὶ δ’ ἀπλοὺν οὐδὲ τὸ πάσχειν, ἀλλὰ τὸ μὲν φθορά τις ὑπὸ τοῦ ἐναντίου, τὸ δὲ σωτηρία μᾶλλον ὑπὸ τοῦ ἐντελεχείᾳ ὄντος τοῦ δυνάμει ὄντος καὶ ὁμοίου οὕτως ὡς δύναμις ἔχει πρὸς ἐντελέχειαν· θεωροῦν γὰρ γίνεται τὸ ἔχον τὴν ἐπιστήμην, ὅπερ ἡ οὐκ ἐστὶν ἀλλοιοῦσθαι (εἰς αὐτὸ γὰρ ἡ ἐπίδοσις καὶ εἰς ἐντελέχειαν) ἢ ἕτερον γένος ἀλλοιώσεως.

is learning. Learning also contrasts with the sort of alteration whereby one quality is destroyed by another, say hot in favour of cold. We might say, of course, that when you learn your ignorance is being destroyed, and in that sense the alteration would count as a change to a state of privation, just as the change from hot to cold is a change to a state of privation of heat. But two considerations should discourage us from assimilating learning to such alterations. First, by learning you develop your own nature, your rationality as a human being.³² Learning is a development or fulfillment of what one already is in capacity, an ‘f-change’, as I call it. Second, by learning you develop a *hexis*, a ‘fixed dispositional state’ in Burnyeat’s paraphrase,³³ rather than a temporary condition (*diathesis*) of the sort ordinarily associated with privations.

How do these distinctions apply to perception? Aristotle tells us:

The first change of the sense faculty comes about by the parent, but whenever one is born, one already possesses (*ekhei*) perceiving (*to aisthanesthai*), similar to the state of knowledge. Perceiving in its activity is spoken of similarly to thinking, but is different in that in its case what produces the activity is external, the visible and the audible, and likewise also the other sensibles.³⁴ (*DA* II.5 417b16–21)

Aristotle refers to the state one is in at birth with regard to perception as already possessing perceiving (*ekhei êdê to aisthanesthai*). Aristotle uses a grammatical form to refer to ‘perceiving’, namely, the articular infinitive, which he elsewhere reserves for the activity of perceiving (*DA* 415a18, cf. 402b13). However, earlier in the chapter (417a9–12) he had warned us that *aisthanesthai* is used in two ways, for the activity of seeing and hearing and for the capacity of seeing and hearing in the sort of state we are characterized by when we are asleep. So he told us that also what is asleep is said to be hearing and seeing. We now know that the potentiality of the sleeper should be understood as a second potentiality, and we can therefore appreciate that, when we say that she who sleeps is perceiving there is good reason for our saying so, given how close second potentiality perceiving is to actual perceiving. Somebody who is in a state of second-potentiality perceiving is in a sense already perceiving. For as a perceiver she needs to develop no further in order actually to perceive: she already (*êdê*) has perceiving, as Aristotle puts it at 417b18.

³² One may perceive a tension between this denial that learning is a change to privative temporary conditions and the earlier claim that the learner alters many times and often chances from an opposite state, *hexis* (417a31–3). However, two points should reduce the tension. First, Aristotle at 417a31–3 does not refer to the repeated changes as ‘changes to privative states’, as at 417b15. Taking a leaf from Burnyeat (2002) 53, we may understand the process as a repeated series of changes from ignorance in respect of particular items of knowledge within a body of knowledge a whole, for example you learn arithmetic by first changing from a state of ignorance with respect to addition, then with respect to subtraction, and multiplication, and so on. Second, as Burnyeat shows, Aristotle is marking a contrast between *diathesis* and *hexis* at 417b15–16, which specifies the sense of *hexis* here as ‘a fixed dispositional state’, whereas *hexis* at 417a33 is left vague.

³³ Cf. Burnyeat (2002) 62–3, 77.

³⁴ τοῦ δ' αἰσθητικοῦ ἡ μὲν πρώτη μεταβολὴ γίνεται ὑπὸ τοῦ γεννώντος, ὅταν δὲ γεννηθῇ, ἔχει ἤδη, ὥσπερ ἐπιστήμην, καὶ τὸ αἰσθάνεσθαι. τὸ κατ' ἐνέργειαν δὲ ὁμοίως λέγεται τῷ θεωρεῖν διαφέρει δέ, ὅτι τοῦ μὲν τὰ ποιητικὰ τῆς ἐνεργείας ἔξωθεν, τὸ ὁρατὸν καὶ τὸ ἀκουστόν, ὁμοίως δὲ καὶ τὰ λοιπὰ τῶν αἰσθητῶν.

If having the capacity to perceive counts as perceiving at a level of fulfilment, it is relevant to ask what the efficient cause of this capacity is. Aristotle's language at 417b16–18 suggests that he sees two stages in the acquisition of the capacity.³⁵ The first change is that initiated by the male parent at conception. The second is the development that the foetus undergoes from conception until birth.

For more information about these stages we turn to the *GA*. Here it emerges that the first change referred to in *DA* II.5 is the change that happens at the point of conception when the male semen first acts on the female menstrual fluid to form the conception. At this stage the father acts as the efficient cause, transmitting through the motions of the semen the animal form to the female's matter. Aristotle explains in *GA* II.1 (735a12–25) that the movements of the semen are those of the nutritive soul.³⁶ The effect of the action of these movements on the menstrual fluid is the formation of the nutritive part, for blooded animals situated in the heart. Once formed, the nutritive part continues to propel the process of growth culminating in the formation of a baby possessing sense-organs. That the sense-organs (in particular the eyes)³⁷ should develop later in the formation of the animal is appropriate since perception is the end for which animals live *qua* animals.³⁸

In this story, the efficient cause of the perceptual faculty appears in the first instance to be the father, because he sets up the first change. Recall here Aristotle's description of the efficient cause in the canonical statement of the four causes in *Phys.* II.3: the efficient cause is 'the *first* principle of change or rest, e.g. the man who deliberated is a cause, the father is cause of the child, and generally what produces of what is produced and what changes of what is changed'.³⁹ However, it is also clear that Aristotle assigns an important role to the offspring's own nature in the formation of the senses. It is the foetus' own nutritive soul that propels the development of the sense-organs. It is important to observe the role that the offspring's own soul plays in its development because it is this role that genuinely offsets the efficient causation by which living beings are produced from that of the production of artefacts. Both in artistic and in natural production the movements of the efficient cause contain the form, but in art, Aristotle says in *GA* II.1 (735a2–4), 'the movement exists in something else, whereas the movement of nature exists in the product itself'. The movements of the offspring

³⁵ Note the μέν...δέ contrast in ἡ μὲν πρώτη μεταβολή...ὅταν δὲ γεννηθῇ.

³⁶ Cf. *GA* 737a18–20. Thus the embryo grows to have the perceptual parts by the agency of its nutritive soul which, because it is the nutritive soul of an animal, is such as to produce or preserve a being with a perceptual soul. This explains why the perceptual part does not have to be formed at the same time in the embryo's development as the nutritive part. Cf. also *GA* 740b29–34: 'As later on in the case of mature animals and plants this soul causes growth from the nutriment... so also from the beginning does it form the product of nature' (revised Oxford transl.).

³⁷ Cf. *GA* 743b33–744b11.

³⁸ Cf. *GA* 742a19–742b17 with *PA* I.1.

³⁹ 194a29–32: ἐτι ὅθεν ἡ ἀρχὴ τῆς μεταβολῆς ἡ πρώτη ἢ τῆς ἡρεμύσεως, οἷον ὁ βουλευσας αἴτιος, καὶ ὁ πατὴρ τοῦ τέκνου, καὶ ὅλως τὸ ποιοῦν τοῦ ποιουμένου καὶ τὸ μεταβάλλον τοῦ μεταβαλλομένου.

may derive from those of the semen but once the embryo has been formed the movements are internal to the offspring in its development.

The point is clarified in *Metaph.* $\Theta.7$,⁴⁰ in a passage we considered in Chapter 1. Aristotle discusses here the question when and when not to say that something is in capacity (*dunamei*) such and such. Aristotle argues (to recapitulate) that we talk differently about a seed being in capacity a man from the way in which we talk about the building materials being in capacity a house. In the case of the seed we say that it is in capacity a man if it itself is such as to become a man if nothing *external* hinders it, whereas in the case of the building materials we say that they are in capacity a house when nothing *internal* prevents an external cause, a craftsman, from making them into a house. The reason for the difference is that we think that the seed has a principle of coming into being in itself. Or rather the seed has this principle not at first on its own, but when it has been placed in another thing—presumably the female menstrual fluid—and there undergone a further change. Once the seed has changed in the female matter, it has within itself the motive principle, that is the efficient cause. From then on its development into a mature human being is a matter of nothing external interfering with it.⁴¹

The crucial point for my purposes is that the animal's own nature, particularly its nutritive soul, is the efficient cause of the development of the second-level capacity of perceiving. The father instils the movements of the nutritive soul in the female matter which brings about the formation of the foetus, but the motions of the foetus' own nutritive part then bring about the sense-organs and with them the second potentiality of perceiving. When we read therefore in *DA* II.5 417b17 that the father is the efficient cause of the *first* change (*prôte metabolê*) that leads to the activity of perception, the qualification 'first' is significant. The movements of the father's semen lead to the formation of the nutritive part in the foetus. But the foetal animal is itself the efficient cause of the subsequent changes that specifically lead to the formation of the

⁴⁰ 'It is necessary to be clear about when each thing is potentially, and when not, for it is not at any time. For example, is earth potentially a man? Or not, but rather when has already become a seed, and perhaps not even then? So just as not everything would be healed by the art or medicine or even by luck but there is something which is capable, and this is what is healthy potentially. And the definition of what comes by thought to be actually from being potentially, is that it comes to be when it is wanted and nothing external hinders it. And there in the person being healed, it is when none of the internal conditions prevent it. Similarly, there is potentially a house, if nothing in the thing acted on—i.e. in the matter—prevents it from becoming a house, and if there is nothing which must be added or taken away or changed; this is potentially a house, and the same is true of all other things for which the source of their becoming is external. And in the cases in which the source of the becoming is in the very thing which suffers change, all those things are said to be potentially something else, which will be it of themselves if nothing external hinders them. E.g. the seed is not yet potentially a man; for it must further undergo a change in a foreign medium. But when through its own motive principle it has already got such and such attributes, in this state it is already potentially a man; while in the former state it needs another principle, just as earth is not yet potentially a statue, for it must change in order to become bronze' (*Metaph.* IX.7 1048b37–1049a18).

⁴¹ Cf. *GA* II.1 734b36–735a4.

sense-organs.⁴² It is those changes that lead to the formation of the animal's second-level capacity of perceiving. The contribution that the offspring's nature makes to its own formation offsets the efficient causation of perceiving from the motions of artefacts which, as we saw, required continued external impetus.⁴³

If we consider the second-level capacity and the activity of perception as stages of perceiving (both, as we saw, referred to as *aisthanesthai*), the first change is that brought about by the parent, whilst those leading to the formation of the sense-organ and thus the second-level capacity of perceiving are specifically due to the animal's own nature. The action of the sense-object actualizes or completes the process initiated by the father and continued by the animal's own nutritive capacity. For this reason, it is wrong to call the sense-object the efficient cause of perceiving without qualification. It may be no accident that Aristotle refers to the sense-object at *DA* 417b20 as 'what produces the activity' rather than as the 'moving cause'. For the sense-object only brings to the final stage of activity a series of changes in the animal of which the animal has itself, from conception on, been the efficient cause.

One might object that this account overplays the contribution of the foetus' own nutritive soul to the formation of the perceptual capacity. When explaining the different contributions of the parents to the generation of animal, Aristotle says that the mother's matter provides the nutritive soul, but the father is responsible for the perceptual soul. He cites the case of a wind-egg which contains within it the nutritive principle, but does not develop into a chicken because it has not been successfully trodden by the male, in such a way as to give it the perceptual ability necessary for an animal. This division of labour may suggest that the nutritive soul, provided by the mother, is insufficient for the generation of the perceptual part in the offspring, but this is caused rather by the motions of the father's contribution. The objection is answered by observing the difference between what is true of the matter prior to conception and what is true of it afterwards: while the maternal blood does contain the nutritive soul prior to conception, and not the perceptual, once it has been set by the male semen, and the foetus has, as Aristotle puts it, become separated from its parents, then the

⁴² Cf. *GA* 735a13–15: 'of course nothing generates itself, though as soon as it has been formed a thing makes itself grow' (transl. Peck). Code (1987) 57–8 argues succinctly for seeing the development of the embryo as a natural change in the sense of change caused by the soul as an efficient cause: 'The active principle is now [i.e. upon the formation of the embryo] present not to menstrual fluid but rather to a rudimentary fetation, and belongs to this new entity in its own right. (The menstrual fluid has become a fetation.) The fetation is a genuine per se unity of matter and form, and contains within itself (and in its own right) the active causal principle responsible for its own natural development into a complete animal. The generation of the animal is thus a natural change taking place in the universe of Aristotelian physics.'

⁴³ It also distinguishes the efficient causation of perceiving from that of the motions of non-living natural beings such as air. In Aristotle's own example (*Phys.* VIII.4), when the water acquires the second-level capacity of moving upwards by turning into air, it does so because something else turns the water into air, say, something hot makes the water evaporate. The simple bodies do not acquire second-level capacities as a result of internally caused changes. Indeed, the lack of an inner differentiation between a mover and a moved within the simple bodies seems firmly to exclude the possibility that the simple bodies could orchestrate their own development.

foetus itself has acquired the motion of the male semen. From that point on the motions that are required to generate the perceptual parts are internal to the foetus, and not external to it. The motions that inform and direct the growth of sense-organs are from then on the embryo's own motions.

If this account of the nutritive soul as the efficient cause of sensory capacity is correct, and of significance for the claim that the soul in general is an efficient cause of living bodies, why does Aristotle not make the account explicit in *DA* II.5? At most, as we saw, he hints at it through the distinction between the first change brought about by the parent and the completed state of the sense-organ at birth. One reason may be that the account belongs to the discussion of the nutritive capacity, and so not to the chapter on the perceptual capacity. However, more fundamentally, the account also presupposes an explanatory viewpoint on living beings which is holistic, in that it shows how the capacity of nutrition works for the sake of the capacity of perception in animals. This viewpoint is appropriate to the biological works' investigation of concrete living beings, which is why the account is developed in the *GA*. In *DA*, in contrast, Aristotle generally adopts a modular viewpoint on the capacities of the soul, explaining each separately in the context of defining them as parts of soul.

We can, however, given the resources of just the *DA* make an argument for the perceptual capacity's involvement in the efficient causation of the activity of perception. The basic idea is that the higher the level of potentiality the patient brings to an activity, the more plausible it is to involve the patient in the efficient causation of the change. We might think of at least three kinds of case to illustrate the last point. First, there are cases where the activating cause simply removes an obstacle to the activity. To use Aristotle's example from *Phys.* VIII.4, someone who moves the stone which holds a wineskin down under water is only accidentally the cause of the wineskin's ascent: the *per se* cause is surely the wineskin itself. For the wineskin would have moved out of the water on its own if it did not happen to be held down by a stone. However, there are also cases where we think that the external cause is essential to the activity's occurring, where nonetheless the patient is very close to manifesting the activity. We might think of a patient who would not become well on his own but who just needs a little medicine to recover. Clearly, here what is required from the agent cause is a little nudge to help the patient fulfil a process which he is almost but not quite capable of achieving by himself. This case seems a promising comparison with perception, given Aristotle's emphasis in *DA* II.5 on the way in which the activity of perception merely completes a development which on birth is already so advanced as to qualify the animal as already perceiving.

On the other hand, the comparison with the convalescent is limited in that it does not reflect the role of the efficient cause in determining also the precise character of the perception. After all, the sense-object does not just make us see, for example, but also we see red rather than blue on a given occasion.⁴⁴ This point is not fully captured by

⁴⁴ I am grateful to Lindsay Judson for stressing this point.

the comparison with the convalescent: to be sure we can say that the medicine in some sense confers the form of health on the patient, but this is the same health that the patient almost has within his reach prior to treatment. In the perceptual case, in contrast, the efficient cause decides which form vision, say, will take, whether it will be vision of red rather than blue. Here we cannot say that the perceiver was already on his way to perceiving red rather than blue since his sense of sight is equally primed for both. A better comparison for perception, therefore, would be a third kind of case where the efficient cause while triggering the activity in doing so also determines the specific way the capacity is activated. We might think of the way a Greek sculptor completes an almost finished statue of a god by adding touches that will make the statue, say, an Apollo rather than a Dionysos. This shaping of the statue will make it a complete statue of a god while also making it a representation of a specific god. (Here we do not say that it is a representation of a god before it is a statue of a particular god, as there is no generic god.) In this model, triggering the activity of seeing involves initiating not just seeing but a particular kind of seeing, seeing red as opposed to blue. Unlike the medicine in the example of the convalescent, the efficient cause of perception has a role in selecting the specific form the activity takes. That said, we may move to reduce the difference with the recovering man further by pointing to the way that seeing red or seeing blue are just instances of seeing *colour*, which the sense of sight may already be said to manifest at a high level of potentiality. This is the important point since it is, after all, seeing colour which defines the capacity of sight as its proper end, and not seeing red or blue. From this point of view, the analogy between the recovering man and the sense of sight seems after all to hold.

The way the senses endow us with a high-level capacity to perceive makes it plausible, then, to involve the perceptual capacities in the efficient causation of actual perception, rather in the way that the advanced stage of recovery of the convalescent makes it reasonable to see his condition as co-responsible for his return to health. As Sarah Broadie puts it 'restorative activity is already an exercise *of* (not merely *for*) health since recovery assumes that the diseased creature is *healthy* enough to recover'.⁴⁵ In Aristotle's thinking about efficient causation, there is no fundamental contrast between seeing the patient's degree of health and the medicine as contributing to the healing, since both ultimately are manifestations of the form of health, and thereby both have the ability to produce health.⁴⁶ Going back to Aristotle's claim back in *DA* II.4 (416a24–7) that in perception also the soul is an efficient cause, it is therefore not implausible to say that even the perceptual soul, the second capacity to perceive, is part of the efficient causation of the activity, for it is by virtue of this high level of readiness for perception that it takes simply the stimulus of a sense-object for the activity to occur.

This point should not be reduced to the earlier point that the soul, in its nutritive capacity, is responsible for developing the sensory capacity, since it is the already

⁴⁵ Broadie (1993) 338.

⁴⁶ Cf. *Metaph. A.3* 1070b28–35.

developed *sensory* capacity which can be seen as contributing to the activity of perception. The nutritive capacity is not responsible for the sensory capacity's ability to respond to sense-objects, though it is responsible for this ability having come about. It is the fact that the animal is already in some manner perceiving that explains why it perceives the sense-object just as, in the analogy, it is the fact that the patient is already quite healthy that explains why he fully recovers when given the medicine.

To conclude, there is a double line of defence for Aristotle behind the claim that the soul is an efficient cause of perception: it is, *qua* nutritive soul, the efficient cause of the development of the second-level capacity to perceive, but it is also by virtue of possessing this capacity, and thereby the sensible form to a high level of fulfilment, part of the efficient causal story of why the activity of perception happens in the presence of sense-objects.⁴⁷ As in the case of nutrition, the efficient causation of perception has turned out to be a complex interaction between us and the world, with an irreducible role for the soul, but not one strong enough to threaten the need for external movers.

⁴⁷ Parts of this chapter have been revised from Johansen (2007).

The Matter of the Soul's Activities

In Chapters 5–6 I argued that the account of nutrition serves as a paradigm of how the four causes are all at work in bringing about the characteristic activities of living beings. The soul, as we saw, worked as an inner principle of nutrition, in being a formal and final cause, and, with qualifications, an efficient cause, with the body as the material cause. In this way, the account of nutrition also provided a paradigm of how the natural philosopher would use the soul in explaining life activities by reference to all four causes. I argued more specifically for the soul as being the formal and final cause of nutrition, by way of being its proper defining object. In the last chapter, I argued for a view of the soul as an efficient cause in nutrition and in a limited way in perception. It is time now to see how the soul in these roles is related to the body as the material cause. I shall start with Aristotle's discussion of this question in *DA* I.1, before turning to the particularly thorny and disputed case of perception. I shall finally ask whether the accounts of perception and nutrition allow for general picture to emerge of the relationship between the body and the soul's activities.

In *DA* I.1, as we saw, Aristotle indicated that before we could define the capacities of the soul we had to consider their activities (*erga*, 402b12). Now, given that many of these activities in one way or another seem to involve the body, one question that arises is whether the activities of the soul can be considered simply as activities of the soul or whether the body also has to be brought into the account of them. Even if, as on the common account of the soul, we end up understanding what the soul is at the level of second-level capacities and the body as first-level capacity for these, we can see why the question about the relationship between the soul and the body in the activities of those capacities matters. One point here is that the soul's activities are the fulfilment of its capacities. So if the activities involve the body then we would expect the capacity too to be realized in the sort of body that helps explain just why the capacity can engage in those activities. If the activities of the soul's capacities require certain bodily activities, then the body too has to be of a character such that it enables the soul to engage in those activities. Otherwise, the second-level capacities would not qualify as such since they would not be realizable. To use Aristotle's analogy of an axe, if chopping involves high-velocity impact on wood, then the axe's head and handle had better be of a material that can resist such an impact. Otherwise the axe will not have the capacity to chop. Similarly, if there are certain bodily affections necessarily involved in the soul's activities, or better the living being's activities *qua* ensouled, then these are an

important factor in determining how the body of a living being must be composed, if the capacity is to be present. So even if we take the ultimate target of the *DA*'s account to be the soul's capacities, as the first fulfilment of a certain sort of body, we can see how considering any necessary bodily activities feeds into determining these capacities.

Aristotle has good reason, then, for worrying already at an initial stage of accounting for the soul about how the activities of the soul relate to the body, and how this relationship is to be reflected in the sorts of account we may or may not give of the soul. One possibility that further complicates the question is whether there is a unitary answer for all the different kinds of activities of the soul. It could be, as Aristotle says (*DA* 403a5–8), that some of the affections of the soul are shared with the body while others are peculiar to the soul. If so, it may be appropriate to mention the body in the accounts of the first kind but not in those of the second kind. Now it is clear that Aristotle not only thinks that there are some affections that are, in a phrase to be disambiguated, 'common to the soul and the body', but also that this is a view that will be shared by others. In fact, Aristotle can rely even on Plato to agree that there are some affections that are common to the soul and the body, since it is he who first explicitly identified this category of affections in the *Philebus* (34a3–b8). Aristotle's examples of such affections appear to have been chosen exactly to reflect this Platonic background: 'being angry, taking courage, feeling appetite, and generally perceiving' (403a7), together with joy, love, and hatred (403a18). Most of these are examples of the affections the soul undergoes when it is embodied, according to Plato.¹ In contrast, knowledgeable thinking (*noein*) also has a Platonic heritage as an affection which the soul undergoes prior to embodiment.² Aristotle is choosing examples even his philosophical opponents will accept in order to build the strongest initial case for there being a category of affections which, in some way to be clarified, involve both the soul and the body.

This dialectical point explains the otherwise puzzling fact that—with the possible exception of perception, which, however, is omitted in the second list (403a17–18)³—none of the affections mentioned are discussed elsewhere in the *DA*. This has raised the suspicion of some—Simplicius for one—that the affections Aristotle has in mind in the subsequent discussion are only a subset of the affections of those we experience *qua* ensouled. In that case Aristotle's point about the relationship between the soul and the body made on the basis of the relationship in these affections need not generalize.

The suspicion may be increased by Aristotle's use of *pathos*, which could be taken to mean just a passive affection, contrasting with the soul's active experiences, and so could be pointing us in the direction of the more specific psychological case of

¹ *Timaeus* 42a–b, 69c–d.

² Cf. *Phaedo* 75b–76e.

³ I say 'possible exception' because if *holôs aisthanesthai* at 403a7 is meant to generalize over *orgizesthai*, *tharrein*, and *epithumein*, then *aisthanesthai* is used in a distinctly Platonic way which has little to do with Aristotle's own conception of perception. See *Timaeus* 43c where all the disturbances of the soul through the body are referred to as *aisthêsis*.

passions,⁴ as shown by the examples, joy, love, hatred, and so on. However, for three reasons, at least, this suspicion is unwarranted. First of all, Aristotle begins the discussion by casting his net widely: he raises the question whether all (*panta*, 403a3) the affections of the soul are common to the body, and he mentions rational thinking (*to noein*), no emotion, as a case of an affection that might be peculiar to the soul. Secondly, Aristotle is careful to use *poiein* ('making', 403a6) and *erga* ('activities', 403a10, 403b11) together with *paskhein*, *pathos*, and *pathêma* to show that passivity is not the issue. Finally, the chapter results in general methodological conclusions about how we as natural philosophers should study affections that are common to body and soul, with the mathematician and first philosopher taking care of the other affections. If Aristotle did not mean by these methodological reflections to cover all of the affections to be discussed in the *DA*, then the question of which science should approach these, and how, would be left seriously unclear at the end of the chapter. It might even be that affections other than the passions, such as nutrition and locomotion, were left to be studied by another discipline than natural philosophy.⁵

It seems, then, that *pathos* is wide enough to also include the active doings of living beings. However, there is reason to believe that the term has even wider scope in *DA* I.1. When the term was first used in the chapter, in *pathê tês psukhês* at 402a9, it seemed to mean 'attributes'.⁶ An expectation has been created therefore when we come across *ta pathê tês psukhês* again at 403a3, at the beginning of the passage we are now discussing, that it will mean the same thing. And later in our passage there are instances where it has to refer to attributes, quite broadly and not specially doings or sufferings. For Aristotle says (403b15–16) that the mathematician studies the *pathê* of bodies by abstraction, for example line, and that the first philosopher studies the *pathê* that are separate from body. Since a line is an attribute of body, but not a doing or a suffering of body, *pathos*, at least in these contexts, must allow for the general scope of 'attribute'. The flexibility of scope may be one that Aristotle himself exploits, since he wants to explain the relationship between the soul's passions and doings (*pathê*) and those of the body by subsuming it under what is true more generally in nature about

⁴ Cf. Burnyeat (1995) 433.

⁵ Burnyeat (1995) 433, n.38 draws a different conclusion: 'I prefer "passions" [sc. for *pathê*] but need only insist on the point that at 403^a3 *pathê* has the wide sense of *sumbebêkota* in contrast to *to ti estin* (402^b25–403^a2 with 402^a7–10), but by 403^a16 these *pathê* have been divided into *erga* and *pathêmata* (403^a10–11; cf. *paschein oude poiein*, 403^a6–7; *erga kai pathê*, 403^b12). Hamlyn translates, very sensibly, "properties" at 402^a9 and 403^a3, and "affections" at 403^a10 and 16. It follows that the famous affirmation at 403^a25 that *pathê logoi enuloi eisin* does not take an explicit stand on the *erga* of soul.' Even if the conclusion is right, it still leaves us with *aisthanesthai* mentioned as *paskhein* at 403a7, as something to be studied as a *logos enulos*. If we limited the scope of the discussion to passive affections, we would be leaving out nutrition and locomotion, and an odd mismatch would emerge between the quite general recommendations of the chapter about how a natural philosopher should proceed (cf. *hapath' hosa . . . erga kai pathê* at 403b11–12) and a very selective approach to psychology, which purposes that only passive affections should be addressed in the manner recommended for the natural philosopher. Active and passive activities belong of course equally the domain of Aristotelian physics.

⁶ 402a8–9: . . . εἴθ' ὅσα συμβέβηκε περὶ αὐτὴν· ὧν τὰ μὲν ἴδια πάθη τῆς ψυχῆς εἶναι δοκεῖ . . .

the relationship between a thing's formal attributes (*pathê*) and its material attributes. The term *pathos* facilitates this subsumption.

Now if Aristotle has Plato in his rear-view mirror when he talks about affections common to the body and soul, we can explain why he chooses the examples he does, anger, love, joy, and so on. These were the sorts of affections Plato referred to when talking of affections common to the body and soul. On the other hand, we can still see the examples as serving to illustrate what Aristotle thinks holds true also of all those affections to be discussed in the rest of the *DA*: nutrition, perception and locomotion, again with the explicit possible exception of theoretical *nous*. However, given its Platonic provenance it is clear that Aristotle also needs to clarify the notion of 'common to body and soul'. Like the phrase 'not without the body', the phrase, at least at this early stage, is left artfully vague: it stakes out a range of affections which involve the body but without taking any position on just what this involvement is. The notion is meant to exclude that the affections of the soul can be separated from the body, but this in turn raises the question of what is meant by being 'separated':

If, then, there is any of the soul's activities or affections that is peculiar, it would be possible to separate it [sc. the soul]; but if none of it is peculiar, it would not be separable, but just as many things belong to the straight *qua* straight, such as touching the [bronze] sphere at a point, but something straight will not touch it in this way if it has been separated. For it will be inseparable if indeed it is always with some body. (403a5–16)

The example of the line suggests that the notion of being with a body serves to rule out that the affections of the soul can exist or occur without a body. But the example does not exclude that the affections of the soul can be accounted for without reference to the body. On the contrary, the thought that there are many affections of the line that are true of it simply *qua* line suggests that we can give such accounts. And this is the way Aristotle thinks that mathematicians talk of the properties of the natural bodies: they talk about what is true of the line simply in terms of having a certain mathematical property such as straight, ignoring the fact that the line is a line belonging to some body or other, and must so belong in order to exist.

The mathematical example may reflect the fact that at this stage of the exposition Aristotle is still presenting the notion of affections common to soul and body in a way that is meant to accommodate a Platonic audience. For while Plato wants to say that the affections of the soul will only exist in conjunction with the body, he may also appear to think of the affections of the soul as separable in account from those of the body in a similar way to the mathematical case.⁷ That is to say, Plato may be taken to think that while the body must undergo some affection in order for the soul to be affected one need not in accounting for the soul's affection as such make reference to the body's affection. For the soul to be changed a change has to arrive at it 'through'

⁷ As suggested by Charles (2008) 27.

the body, as Plato sometimes puts it,⁸ but the change that defines the affection as such would be of the soul alone. That the body is affected would, then, on this reading of Plato, merely be a precondition of the soul's being affected, but not part of the affection as such.

Whether or not this is a plausible reading of Plato, we shall shortly see that Aristotle rejects the view. But notice first that he also seems to reject a view of the dependency of the soul's affections on the body which, while allowing for the body to be an existential precondition of the soul's affections, would not require that the body itself somehow changed as a precondition of the soul's affections: 'For at the same time as (or 'together with': *hama*) these, the body suffers something (or 'somehow': *ti*)' (403a18–19). It is not simply the case, then, that the body is required as a static background condition for the affections of the soul: it has to be the case that we can identify some respect or some way in which the body suffers when the soul is affected. Nor therefore can we reduce the body's involvement in these affections to that of providing the material basis for the second-level capacity. For Aristotle is referring to what happens to the body insofar as the soul is active in anger, fear, love, hatred, and so on, where the infinitives (*philein*, *misein* 403a18, cf. 403a7) seem specifically chosen to direct us to the activity rather than the mere capacity (cf. 402b13). In order to specify what the body undergoes in these affections it is not enough, therefore, to point to a state that the body is in anyway prior to the activity of the soul: there has to be a change of some sort in the body happening at the same time as the soul is affected.

This condition still leaves many options open. For example, it does not exclude the reading according to which the bodily affection in actual perception is somehow not an ordinary 'o-change',⁹ though it does require of such a reading that the respect or the way in which the body is changed not simply be the respect or the way in which the soul is affected, for then nothing would be added by this condition to saying that the soul is somehow affected. However, this constraint also raises the non-trivial questions of what for Aristotle counts as a material change, and how if at all such changes are to be demarcated from formal psychological changes.

We should, as several commentators have warned, be wary of setting up Aristotle's inquiry into the relationship between the soul's and the body's affection as if it was the inquiry into the relationship between two different kinds of event.¹⁰ For Aristotle, part of the point of viewing the soul's and the body's affections as related as form to matter is to see them as essential unities. It is easy for us, particularly when dealing with the cognitive processes like perception, to slip into thinking of the mental process as somehow a distinct type of event which has to be related in some way to another

⁸ For example at *Timaeus* 43c4–5. For further discussion of the phrase, see Chapter 13 p. 261.

⁹ As advocated most prominently by Burnyeat (1992), (1993), and (2002). In Johansen (1997) 252–80, I also took this view.

¹⁰ See Burnyeat (1993), Johansen (1997), Charles (2008) and (2009).

kind of physical event. One antidote to this tendency is to think of other life activities, which, obviously, are integral psycho-somatic unities. Running, for example, is for Aristotle an activity of the soul and the body, no less than perceiving. One may describe the activity in different ways, one, say, as a means of propelling oneself quickly on land in order to reach a desired location quickly and another as a fast motion whereby two or more limbs are successively bent and stretched, or some such thing. One description may make overt mention of body parts and motions in or of these, and may therefore count as 'material', another may involve psychological factors like aims or desires, but what both refer to is clearly the sort of spatial motion we think of as running. For Aristotle perception and the other embodied life activities are like running, integral psycho-somatic processes.¹¹ We should not think when Aristotle calls for an account of what happens to the body that this is not also something that happens to the soul, nor that when he describes the affections of the soul that these are not also affections of the body. An affection 'common to body and soul' means, amongst other things, an affection that occurs in the soul when and insofar as the body is affected, and *vice versa*. Aristotle has thereby significantly narrowed the scope of the phrase 'common to body and soul' compared to its Platonic use.¹²

To proceed with Aristotle's argument in *DA* I.1, the examples that steer Aristotle in the direction of saying that the soul's affections are not just inseparable in existence from those of the body but also inseparable *in account* from them are the examples of being afraid and angry. So he says:

This is shown by the fact that sometimes although strong and vivid affections take place one does not become excited or fearful, while sometimes one is moved by small and feeble things, when the body is upset and is in the way it is when one is angry. But this is even clearer: for when nothing frightening is happening people are experiencing the affections of somebody frightened. If this is the case, then it is clear the affections are enmattered accounts (*logoi enuloi*), so that the definitions (*horoi*) will be such as 'being angry is a sort of change of this kind of body or part of body or capacity by this kind of thing for the sake of this'. (403a18–27)

Aristotle points to three cases. One is where there are some very frightening things happening and we fail to feel fear. The implication here is that we are not afraid because the bodily affection is missing. The second case is where something only slightly scary is happening but we still feel quite afraid because the body is affected. The last case is an extreme version of the second: here nothing frightening is happening, but we are still somehow affected as if we were frightened. I think it is significant that Aristotle in this last case does not say that we are actually frightened, but only that we 'are experiencing the affections of somebody frightened'. The implication seems to be that in this case, because of the absence of any frightening object, we cannot quite

¹¹ Cf. also Aristotle's comparison of the affections of the soul with *weaving* at *DA* I.4 408b11–13, highlighted and discussed by Charles (2009) 296–7, 302–3.

¹² This narrowing is part of the story of why Aristotle can refer to some of his own works as concerned with affections common to body and soul. For the whole story see the discussion of *DA* III.10 in Chapter 12.

properly talk of being afraid. There is a difference between, as in the second case, being easily frightened and then being frightened for no reason, and we may be inclined, as I think Aristotle is here, to say that 'fear' is used in the latter case in an attenuated sense. The qualified language serves, then, to reflect Aristotle's view that fear, proper fear, is caused by two main factors: the object which affects the soul as frightening and the bodily affection. Significantly both of these factors have to be brought in to explain how and why fear arises. But if so, it should be clear also that the account of fear has to make reference to both the formal side, the affection of the soul, and the bodily side, the affection of the body.

Now given the role played by the body in accounting for these affections, there is an obvious contrast with the mathematical affections. For we said that the line touched the sphere at a point by virtue of being a line, rather than by virtue of any of those things that might be true of it by virtue of being made of certain kind of matter, say, bronze. Here the expression 'by virtue of' (*hêi*) points to the explanatory feature. In contrast, the explanation of anger relies on there being both a formal and a material element, since without the material element we could not explain why anger, or something like it, also occurred in important cases where the formal side was abnormal.

The other, related, difference between the two cases is that the material condition of fear or anger's occurring is a very specific bodily affection. Aristotle says that anger arises when the body is agitated and is in the way in which it is when one is angry. The impression that this refers to a particular kind of bodily condition is confirmed by the outline definition of anger. Being angry is a change of 'this kind (*tou toioudi*) of body', where the deictic singular suggests one determinate kind of thing. In contrast, it made no difference to the line's touching the sphere at a point what material it was made of. As we might say with a nod to the principle of sufficient reason, if there is no reason why a particular kind of matter should explain why the line touches the sphere at a point, there is no reason in general why matter should explain it. The absence of any particular material causal explanation indicates the general absence of any material causal explanation.

The case of anger is quite different. We have seen that both the soul's and the body's affections need to be brought into the account. The involvement of the body's affections, like the reference to change (*kinêsis*) is enough for Aristotle to say that the material account is in the domain of the natural philosopher. However, we have not yet said how the two are related within the account. This relationship will determine how we are to study the soul. For by saying that the soul and the body both have to be brought into the account we have not yet excluded that while the natural philosopher will investigate the bodily side, it falls to another to investigate the soul, a mathematician-like character who specializes exclusively in the formal side of natural phenomena. In that case we could think of the explanation of anger as being a joint scientific project involving an account of the formal element provided in the manner of mathematics added to an account of the material element only, provided by the natural philosopher. Aristotle seems to acknowledge this possibility when he says that the natural philoso-

pher and the dialectician would define anger differently: the natural philosopher as a boiling of the blood and the hot in the area of the heart, and the dialectician as a desire for retribution or some such thing. However, it is conspicuous that he whose approach we would now associate with the mathematician is referred to here as a 'dialectician'. The term resonates with its negative use a few lines back (403a2) for somebody offering an 'empty' (*kenós*) or, as Simplicius paraphrases, 'superficial' account. It would in fact be inappropriate to refer to this character as a mathematician since the mathematician is quite justified in treating his properties as separate from matter—there is nothing empty about explaining mathematically how a line touches a sphere at a point—whereas the affections we are dealing here cannot be properly be explained in abstraction from the matter.

This point suggests that the reason why there cannot be a division of labour between a mathematical-style account of the soul's affections and a merely material account of the body's is that such accounts would misrepresent the form. Consider how Aristotle specifies the form. In the account of anger there is an explicit mention of the material cause and the efficient cause, but not of the formal as such. In its place we find the final cause: 'for the sake of this'. That this is deliberate is confirmed a few lines down:

For this account is of the actual thing (*tou pragmatos*),¹³ and it is necessary for this to be in matter such as this, if it is going to be. Just as one account of a house is of this sort, [saying] that a house is a covering which prevents destruction by the wind and rain and heat, and another will say that the house is stones, bricks and wood, while [yet] another other will say that it is the form in these [materials] for the sake of these things. (403b2–7)

The phrase 'the form in these [materials] for the sake of this' does not so much add the specification 'for the sake of these' to the form as it specifies what sort of form it is, namely, the form that is the final cause. This is because in nature the formal cause is generally the same as the final cause, as we saw in Chapter 5.¹⁴ Mathematical forms, in contrast, are not also final causes. The difference is crucial from the point of view of understanding the way in which accounting for the form of natural beings involves accounting also for their matter.

A major criticism of Plato (*Phys.* II.2 193b35)¹⁵ is that he treats natural forms as if they were mathematical forms, like shape or figure, rather than as functional attributes where the form works as an end.¹⁶ But in nature the form is not just the form of the matter, it is also its final cause.

¹³ Following Ross's text: *ὁ μὲν γὰρ λόγος ὅδε τοῦ πράγματος...*

¹⁴ *Phys.* 199a30–2: 'Since nature is two-fold, the matter and the form, of which the latter is the end, and since all the rest is for the sake of the end, the form must be the cause in the sense of that for the sake of which'; *GA* I.1 715a8–9: 'for the account (*logos*) of a thing and "that for the sake of which" as an end are the same...'

¹⁵ ... and of Empedocles and Democritus, cf. *Phys.* 194a2–21 with 199a30–2. The relationship between the two texts is well explored in Lennox (2008) 171–80.

¹⁶ Cf. Johansen (2010).

Having the form as a final cause has certain implications for the matter. For the final cause, as Aristotle puts, renders certain features of the matter hypothetically necessary. That is, if the form is to obtain, then the matter has to be such and such. It is this point that Aristotle adverts to at 403b2–7. Contrast again the mathematical case. For a mathematical form to exist it has to be the property of *some* matter, but *which* matter plays no role. Nothing about the character of the matter is entailed by saying that a line meets a circle at a point. We cannot say then that if the line is going to meet the circle at a point, the matter of either has to be such and such. Aristotle treats mathematical truths as characterized by a different kind of necessity.

The difference is explained in *Phys.* II.9. Aristotle argues that in nature material attributes are hypothetically necessary, necessary for a certain end, just as in art it is necessary that a saw be made of iron, or some such specific matter, if it is going to be an instrument for sawing. He contrasts hypothetical necessity with necessity in mathematics. There is a similarity between the two cases of necessitation, namely that if the conclusion is not true, the premises will not be true either; however, while in mathematics nothing about the truth or falsehood of the premises follow from the truth of the conclusion, in hypothetical necessity it also follows from the truth of the conclusion, expressing the end, that the premises, expressing the means, are true. He uses the example of a house, the same example as in *DA* I.1, to illustrate the difference and similarity between the two cases:

If, then, there is to be a house, such-and-such things must be made or be there already or exist, or generally the matter relative to the end, bricks and stones, if it is a house. But the end is not due to these except as the matter, nor will it come to exist because of them. Yet if they do not exist at all, neither will the house, or the saw – the former in the absence of stones, the latter in the absence of iron – just as in the other case the premises will not be true, if the angles of the triangle are not equal to two right angles. (200a24–30)¹⁷

The difference from the mathematical case is that we can infer something quite specific about the nature of the matter given the hypothesis of the form. Given the existence of the natural form, certain material conditions must obtain. The earlier example of the saw, which Aristotle refers to here, makes the point vivid:

Why is a saw such as it is? To effect so-and-so and for the sake of so-and-so. This end, however, cannot be realised unless the saw is made of iron. It is, therefore, necessary for it to be of iron, if we are to have a saw and perform the operation of sawing. (*Phys.* 200a9–13)

The end of a saw is sawing. But if one thinks about what sawing is, that is, cutting and cutting of a certain sort, it is clear that such cutting will only take place if what does the sawing is made of certain materials. It is therefore also clear from thinking of a saw as something that serves the purpose of sawing that a saw will be made of a certain kind of matter. It has be matter which can be thin, sharp, flexible, durable, and hard. The

¹⁷ Translations of the *Phys.* are here and elsewhere in the chapter from the Revised Oxford Translation.

example of a house in *DA* I.1 makes the same point. Aristotle makes it explicit that the end of a house is a certain function, providing shelter against the elements, and that this is a function which, like sawing, has specific implications for the material composition of a house. The matter has to be highly determinate: *hule toiadi* (403b3). Again, nothing like this was true of the mathematical case we considered: nothing specific followed about the matter of the circle or the line from saying that they met at a point.

Now it follows also from this way of looking at natural entities that the matter has to be explained from the point of view of the form. For we understand why the matter has the characteristics it does from the point of view of their contributing to the form. It is the job of the account of matter to spell out then the way the matter serves the form as its end.

However, we can also now see more clearly why the job of accounting for the soul's affections cannot be divvied up between separate formal and material accounts. On the side of the form, the form has to be accounted for as the final cause in a way that supports through hypothetical necessity a certain specification of the matter. On the other side, the matter has to be accounted for in a way that offers just this specification of matter and shows how it contributes to the realization of the form.

The formal and material accounts are, in this way, implicated in each other. But it is important to note that neither account reduplicates the other. It is one thing to say, as I am saying, that the account of the form has certain implications for the sort of matter that can carry that form, because the form is the final cause. It is another thing to introduce the matter into the account of the form itself.¹⁸ By doing its job the formal account is not also doing the job of the material account. Rather it is creating another job with quite precise specifications for the material account. Compare the closing lines of *Phys.* II.9:

Perhaps the necessary is present also in the definition. For if one defines the operation of sawing as being a certain kind of dividing, then this cannot come about unless the saw has teeth of a certain kind; and these cannot be unless it is of iron. For in the definition too there are some parts that stand as matter. (200b4–7)

What Aristotle is considering here is not whether the matter enters in the definition of the *form* or function of sawing, but whether it may enter into the definition of a *saw*. The reason why it *may* enter into the definition of a saw is that the account of the form makes it necessary also to account for the matter in order to explain how a saw can do what it does. The guarded language should be read in the light of Aristotle's suggestion in *Metaph.* Z.10–11 that the proper definition of sensible substances is of the form, not the matter.¹⁹ If there is an argument for bringing the matter into the definition, it is an argument for bringing it into the definition of the composite, not for the form as such.

¹⁸ Charles (2008) has significantly influenced this chapter, but I differ from him on this point in not taking the matter as part of the form, cf. Charles (2008) 9–10.

¹⁹ See Frede (1990).

Let's see whether this analysis of the relationship between form and matter in psychological explanations is borne out by Aristotle's conclusion in *DA* I.1:

Or is there not one who is concerned with the affections of matter which are not separable nor *qua* separable, but the natural philosopher is concerned with all such functions and affections as are of this kind of body and of such matter, and another is concerned with things that are not of this sort. Is it then that a craftsman, perchance, such as a carpenter or a doctor, will be concerned with some things, but the mathematician is concerned with those affections which are not separable but are taken as not being of such a body and abstracted, while the first philosopher studies affections insofar as they [really] are separate? But to return the argument to its starting point, we were saying that the affections of the soul are inseparable from the natural matter of animals in this way, in the very way in which affections obtain such as anger and fear, and not in the way that a line or a surface does. (403b9–16)²⁰

The passage marks distinctions between kinds of affections and kinds of study of those affections. First, there are the affections studied by the natural philosopher. These are not separable from matter, and the natural philosopher treats them as not separable. His interest is in *all* of these affections. Now some of the affections that are not separable from matter are dealt with by the craftsman. Though this is not explicit it is fair to think that he also treats them as not separable, but what distinguishes him from the natural philosopher is that he is only interested in some of the affections, presumably the particular ones that are useful for his production. Thus a carpenter may be interested in the affections of wood just to the extent that they serve the purpose of making a table, while the natural philosopher will be interested generally in the affections of wood. Another subset of the affections that are not separable from matter are those studied by the mathematician. These are affections which may be treated as separable. This way of reading the passage allows for the natural philosopher and the mathematician to study some, but not all, of the same properties, lines say, while studying them in different ways. An example would be the way optics studies lines as compared to the way geometry considers them. Finally, there is the first philosopher, who studies affections that are separate from bodies as such.

The affections as studied by the natural philosopher are referred to as 'all such functions (*erga*) and affections as are of this kind of body and of such matter' (403b11–12). The reference to the affections as 'functions' supports their role as final cause, while the qualification of the matter as 'of this kind' (*toioudi*) recalls the earlier determination of the matter by hypothetical necessity (*toiaidi*, 403b3). The final lines

²⁰ ἡ οὐκ ἔστιν εἷς ὁ περὶ τὰ πάθη τῆς ὕλης τὰ μὴ χωριστὰ μὴδ' ἡ χωριστά, ἀλλ' ὁ φυσικὸς περὶ ἅπανθ' ὅσα τοῦ τοιουτοῦ σώματος καὶ τῆς τοιαύτης ὕλης ἔργα καὶ πάθη, ὅσα δὲ μὴ τοιαῦτα, ἄλλος, καὶ περὶ τινῶν μὲν τεχνίτης, ἐὰν τύχη, οἷον τέκτων ἢ ἱατρός, τῶν δὲ μὴ χωριστῶν μὲν, ἢ δὲ μὴ τοιούτου σώματος πάθη καὶ ἐξ ἀφαιρέσεως, ὁ μαθηματικὸς, ἢ δὲ κεχωρισμένα, ὁ πρῶτος φιλόσοφος; ἀλλ' ἐπανιτέον ὅθεν ὁ λόγος. ἐλέγομεν δὴ ὅτι τὰ πάθη τῆς ψυχῆς οὕτως ἀχώριστα τῆς φυσικῆς ὕλης τῶν ζῶν, ἢ γε τοιαῦθ' ὑπάρχει <οἷα> θυμὸς καὶ φόβος, καὶ οὐχ ὥσπερ γραμμὴ καὶ ἐπίπεδον.

(403b17–19) confirm that psychology will study affections of the soul in this way: as natural rather than as mathematical forms.

Now if this interpretation is right, then it helps us also understand how Aristotle, on the one hand, can insist that the affections of the soul be explained in the manner of a natural philosopher, where that implies that the soul and the body are both accounted for, while on the other hand, proceeding in the *DA* with an account of the soul as such, rather than an account of the soul and the body. To account for the soul as a final-formal cause of the activities of the living being will have quite specific implications for the sort of matter the living being is made of, since it will have to provide material means for those activities. To experience anger a living being must have the ability not just to conceive of and desire revenge, it must also have blood in the area of the heart capable of heating up, or at least some analogous matter capable of contributing to the realization of anger. However, to define the soul as the final-formal cause, which has such-and-such implications for the composition of the body, is not itself to mention the material cause in the definition of the soul. Indeed, we may think that is important that it should be possible to define the formal-final cause without mentioning the material cause, if the formal-final cause is to maintain definitional *priority* over the material cause. It is perhaps significant that even while Aristotle urges us in *DA* I.1 to account for the soul's affections in the manner of the natural philosopher he still refers to the account of the form as that of the *logos* (403b8),²¹ as if the formal account of psychological phenomena is still *the* definition. Given the priority of form from the point of definition, Aristotle might therefore feel entitled to proceed in the *DA* with the definition of the soul as the formal, final, and efficient cause of living being without providing full material accounts of the various affections caused by the soul. This helps explain a feature of the *DA* which has been widely observed by commentators, namely, that its account of the soul and its activities in some way is focused on formal definition. But when making this kind of point, what one must crucially add in view of *DA* I.1 is that the formal definition is supposed to serve as a starting point for a full natural philosophical account of the activities of living being, and that the form therefore is specified in a way that implies specific material accounts of those activities, in contrast to the sort of formal definition offered by a mathematical style account.²² To say that the *DA* offers an abstract account of the soul is therefore misleading if this is taken to mean that the formal account is one that does not heed the material conditions of realization. On the contrary, the account of the soul as a formal account is, by the criteria of Aristotle's natural philosophy, only successful if the form is defined in such a way that a specific account of the matter is necessitated by it.

²¹ See Lennox (2010).

²² Frede (1990) 120 makes the crucial distinction, though not in terms of hypothetical necessity and final causation.

The Matter of Perception

Is the programme announced by *DA* I.1 of accounting for the affections of the soul as common to the body borne out by Aristotle's own practice in the rest of the *DA*? The account of nutrition, as I have presented it, provides a fairly clear confirmation. The body of the living being is maintained in nutrition by the addition of nutriment which the soul prepares as the formal, final, and efficient cause. There are necessary material changes in the first nutriment as it is cooked up and turned into serviceable blood and body parts, and there is a material process on the side of the nourished body whereby the final nutriment is added to and integrated into the living body. Again Aristotle is not developing any particular account of these material changes in the *DA*; that is a job, as we have seen, which is left for the *GA*. Nor is it to be expected that he would provide a particular account of the material changes of nutrition, if I am right that the *DA* aims to provide an account of the soul's capacities as the formal, final, and efficient causes of the characteristic activities of living beings.

The situation in the case of perception seems much less clear. Indeed, the question of what, if any, are the material affections that the perceiver undergoes insofar as he or she perceives has been hotly contested in recent scholarship.²³ My aim here is not to arbitrate in this debate. Nor shall I offer any specific accounts of the various material changes that might be necessitated by the formal or final cause of the various kinds of perception. If I am right in my reading of *DA* I.1, we should not expect Aristotle to develop specific material accounts of perceptual activities in the *DA*, though we would expect the formal account of perception to be such that specific hypothetically necessary material changes could be seen to follow from this account. What I would like to show is that the account of the soul as a formal and final cause of perception is on this point consistent with my analysis of *DA* I.1.

There is nothing in *DA* II.5, as sometimes thought,²⁴ to contract the claim that there are necessary material changes in perception. Aristotle offers, as we have seen, two sets of distinction between kinds of alteration in *DA* II.5:

- 1) between the alteration from first-level to second-level capacity and the alteration from second-level capacity to activity (417a21-b1);

²³ There is a distinction to be made, and insisted on by Heinaman (2007) 163, between the question of whether the change to perceiving involves a material change, and if so what it is, and whether the continued perceiving involves a material change and if so what it might be. (So we might distinguish between the changes in the aeroplane required to make it take off and the ones required to make it stay in the air.) However, the change required to perceive an object seems to be the same as the one required to continue perceiving it, namely the action of the sense-object on a suitably disposed sense-faculty; to make itself perceived the sense-object has to affect one's sense-faculty and *continue* affecting it. One might raise questions about the conditions of continued attention (the fridge stops being noticed after all although it keeps making the same sound); however, there is no indication that Aristotle was concerned with these. For more on Aristotle's alleged conflation of perception with the transition to perception, see Bowin (2011) 156–7.

²⁴ Also by me in Johansen (1997) 274–80.

- 2) between a kind of alteration that involves a destruction of one attribute by the opposite, and a kind which is rather a preservation of what is in capacity by what is in fulfilment (417b2–5) and an advance to the thing itself and to its fulfilment (*eis hauto hê epidosis kai eis entelekheian*, 417b6–7).
- (2) is the distinction I referred to in Chapter 1 as the distinction between an o-change and an f-change. However, he also offers a third distinction:
- 3) between two kinds of alteration: ‘a change to privative dispositions’ (*epi tas sterêtikas diatheseis metabolên*) and ‘(a change) to states and nature’ or ‘natural state’ (*tên epi tas hexeis kai tên phusin*) (417b14–16).

This distinction seems in the first instance to capture the way in which the subject of learning does not change, that is, the way in which the subject moves from a first-level capacity to a second-level one by fulfilling an attribute it already possesses rather than divesting itself of it. However, the similarity between the notion of ‘an advance to the thing itself and its fulfilment’ and the notion of a change to ‘the natural state of the thing’ suggests that Aristotle is now reapplying the dichotomy of alterations referred to in making distinction (2). The teleological conception of fulfilling what one is, adverted to in (2), seems well suited to capturing what is also involved at the level of moving from a first-level to a second-level capacity when the attributes developed, like one’s knowledge, are ones that relate to what one naturally is, in the way man is a natural knower (417a24). In (3), then, Aristotle is reapplying the notion of an advance to the thing itself, referred to in (2), to the alteration from first-level to second-level capacity in learning and perception, to offset this alteration from the change to privative disposition. In the earlier case (2) he was applying this notion to the alteration from second-level capacity to activity, to offset it from destructive changes. But in both cases the positive alteration counts as fulfilling at different levels of potentiality the nature or being of the thing in question, that is, both alterations are f-changes.²⁵

It is clear, from distinction (2), that Aristotle wants to say both that actual perception is a fulfilment and that it is a kind of preservation rather than destruction. However, it is not clear that the distinction in (1) lines up with (2) in such way that a change from

²⁵ This is denied by Bowin (2011) 149, who writes: ‘Burnyeat claims that a destructive affection should be neutrally characterized as merely “the loss of one quality and its replacement by another”, while Heinaman thinks that the word *φθορά* at 417b17 makes destructive affections unnatural because the same word is used at *Metaph.* H 5,1044b33 to describe the loss of a natural disposition. But this hardly proves that every *φθορά* τις *ὑπὸ τοῦ ἐναντίου* is unnatural, and the fact that Aristotle says that a contrary is destroyed by a contrary, without suggesting that one or another of the contraries is either unnatural or natural, seems to confirm Burnyeat’s view on the neutrality of destructive affections. But if destructive affections are neutrally characterized, and privative alterations and unordinary alterations are characterized as unnatural and natural, then neither Everson nor Burnyeat nor Heinaman can be correct in identifying the classes of destructive affections and privative alterations.’ Bowin seems to ignore the way the description of the preservative affection segues into the description of the latter fulfilment as ‘an advance to the thing itself and to its fulfilment’. The subject of change is also significant: Aristotle speaks at 417b5 of *what contemplates (to theôroun)* as not altering (‘for the change is an advance to the thing itself and to its fulfilment’). If the preservation of the quality in this kind of alteration is such as to fulfil what the subject is, it can hardly be described as ‘neutral’ with respect to being natural or unnatural.

first-level to second-level capacity is always a destructive alteration. For, as Aristotle himself points out both here in *DA* II.5 and in *Phys.* VII.3, learning, the move from first-level to second-level capacity of knowledge, is not a destructive change but rather, like a preservation, an advance to the thing's own nature (417b14–16). But then it cannot be true to say in general that changes from first to second-level capacities are destructive changes. A similar point could be made about the change from first-level capacity to second capacity *perception*, since, as we saw in Chapter 7, in the *GA* this change is properly understood as part of the coming into being (*genesis*) of the animal as such, that is, as part of a coming into being of the sort identified by *Phys.* VII.3 as a *completion* (*teleiôsis*). Conversely, it may be that there are alterations from second-level capacity to activity that count also as destructive changes. So in *Phys.* VIII.4, Aristotle illustrates the three stages of potentiality and fulfilment by what is light: water is in capacity light in the sense that it can be turned into air which is not yet actually light in the sense that it may still be prevented from rising up. Only when it is moving up to its proper place would we say then that it is actively light. Here, rising up seems to involve exchanging one opposite spatial attribute for another. It seems, then, that neither the alteration from a first-level to a second-level capacity, nor that from second-level capacity to activity, is incompatible with being an o-change or an f-change.

In *Phys.* VII.3 Aristotle argues that all alteration happens in terms of perceptible qualities. It is important to this argument that perception itself should be an alteration. Aristotle contrasts completions such as learning or contemplation with alterations, such as perception. At first inspection *DA* II.5 seems inconsistent with this contrast.²⁶ For if the point is to characterize perception as a completion and preservation, like contemplation, rather than as a change of qualities, then he can hardly maintain the contrast between the two in terms of perception being an alteration and contemplation a completion. However, Aristotle says carefully in *DA* II.5 that he is using alteration by extension in the case of perception and contemplation. We need a further distinction, then, between perception and contemplation which can explain both how perception can be said to be an alteration, yet not an alteration in a way that disqualifies the assimilation to contemplation as a form of completion.

It is hard, at first, to see what this distinction could be, since there seems to be little conceptual space within Aristotle's argument for actual perception not to be either an o-alteration, as I have called it, that is an alteration of the sort whereby one opposite is exchanged for another, or a completion like contemplation whereby what is in

²⁶ Compatibility between *Phys.* VII.3 and *DA* is not universally accepted. So Menn (2002) 89–90 sees *Phys.* VII as an earlier text, propounding an instrumentalist view of the soul–body relationship, revised by the *DA*. For a response to Menn, showing the compatibility of the hylomorphic and the instrumentalist perspectives, see Charles (2009). Moreover, even if one thinks that Aristotle has developed his views between *Phys.* VII and the *DA*, the claim that perception is an alteration remains a constraint on the *DA* account, for, amongst others, the reason given by Burnyeat (2002) 81: if perception is not an alteration, then ultimately there will be no alteration in the natural world.

capacity is preserved in the activity. These are the two options given us at 417b2–5 in distinction (2). Having offered reasons why neither learning nor actual contemplation is an o-alteration, Aristotle compares actual perception to contemplation at 417a19. This creates the impression that actual perception is a sort of completion, since this was how actual contemplation was referred to at 417b6–7 (*eis hautō gar he epidosis kai eis entelekheian*).

On the other hand, however, at 417b20 Aristotle contrasts actual perceiving with actual knowing in terms of their different relationships to their objects. Contemplation is up to us because its objects, universal intelligibles, are already in our souls, while actual perception requires the action of a particular external object. We can say that because the intelligibles are already in us—we have been informed by them through learning—we are already qualified by them. *DA* III.5 suggests that they come to our attention by being activated by active intellect, as if it was illuminating objects already within us. In contrast, the sensible forms are not already in the sense-faculty, nor could they be as features of external particulars, and so we require the action of the external object on us to perceive it. Now *Phys.* VII.3 brings up the point that the objects in contemplation are universals, while perception of particulars merely prompts us to think of them, as a point in favour of saying that contemplating is not alteration. But by the same token, it seems a reason for saying that perception is an alteration.

Now Aristotle concludes *DA* II.5 as follows:

The sensory capacity (*to aisthêtikon*) is in capacity such as the sense-object already is in fulfilment, as we said. So it is affected insofar as it is not similar, but when it has been affected it has become similar and such as that thing (sc. the sense-object). (418a3–6)

Why is being made similar from not having been similar not a case of one opposite being destroyed by another? It does not help to say that what is dissimilar need not be opposite, since Aristotle tends to bracket dissimilarity with opposition when he treats change schematically in *GCI* I.7. To say that the sense-faculty is already in capacity what the sense-object is in activity does not seem an adequate answer since also in 'destructive' changes the patient is already in capacity what the agent already is in activity. The cold water is in capacity hot.

We have then considerations for and against saying that perception is an alteration rather than a completion. The compromise solution is to take a leaf from our discussion of the common account in Chapter 1: what characterizes fulfilments, 'f-changes', and sets them apart from ordinary changes, 'o-changes' is that in the change the subject does not lose the property with respect to which it f-changes.²⁷ So the learner does not

²⁷ As suggested also by Caston (2004) 296. Lorenz (2007) 186 n.14 objects 'this is inadequate since learning is also a case of both exercising and preserving a capacity, namely the capacity for knowing that comes with being a rational animal'. Lorenz has previously argued that learning is a destructive change, in view of the characterization of learning at 417a30–1. He accordingly takes the distinction at 417b15–16 used to characterize learning 'as a transition to one's own states and nature' to be a distinction within destructive changes rather than a reiteration of the distinction between f-changes and o-changes at 417b2–5. However,

lose the property by virtue of which he is capable of learning, namely being human, and in exercising his knowledge he does not lose his capacity to exercise his knowledge. This is what Aristotle is referring to when he says at 417b3–5 that f-changes are ‘rather a preservation of what is in capacity by what is in fulfilment’.

Through this reading, actual perception as an f-change is relevantly similar to the completions mentioned in *Phys.* VII.3. It is no accident after all that f-changes are picked out as a state of fulfilment (*entelekheia*), while contemplation is a completion or fulfilling (*teleiôsis*). They are both descriptions of the state in which the thing in question reaches or has reached its goal (*telos*). However, actual perception remains appropriately different from these changes in that the fulfilment of the capacity relies on the actualization of a quality, while the completions referred to in *Phys.* VII.3 were completions in the categories of substance or state or relation. One might say that *DA* II.5 refines the account of *Phys.* VII.3 by allowing that a completion may itself fall within the category of quality, an option *Phys.* VII.3 understandably left out given Aristotle’s concern in that chapter to show that alterations are generally all in terms of perceptible qualities. Perception ought to be an example of alterations since the qualities are indeed perceptible and are therefore in themselves such as to bring about perception. It remains true that not all changes in terms of perceptible qualities are perceptions: heat causes perception, but it also makes pokers hot, bread in the oven go brown, the air in the balloon expand, and so on. However, Aristotle’s argument would be needlessly complicated if he were to bring in the point that perceptual alterations are also completions, since the crux of Aristotle’s argument is that being concerned with perceptible qualities makes alteration distinct from other kinds of change. To distinguish those alterations in terms of perceptible qualities that are like completions from those which are not would, as the complexities of *DA* II.5 show, be to overload the argument.²⁸

One might still worry about the coherence of the idea of a perfective change which is also an alteration, albeit in some attenuated sense of ‘alteration’. For does not ‘perfection’ have to mean perfection of a *substance* so that a perfective change would necessarily fall in the category of substantial change? Certainly, *Phys.* VII.3 emphasizes the categorical contrast between alterations and perfective changes. However, first of all the fact that perfections are relative to a substance does not mean that the perfection itself belongs to the category of substance. So some states (*hexeis*) which are perfections are said to be relations. Health, for example, is a relation, namely the proper proportion of hot and cold elements in the body (246b3–5). We might say in these cases that the

as indicated above, I take it in view of *Phys.* VII.3 that both learning and exercises of knowledge are completions and so fall on the side of f-changes. (I agree, however, with Lorenz’ critique of Caston’s further use of this point.) For learning being an f-change (‘unordinary alteration’ in Bowin’s terminology) but not a destructive change, see further Bowin (2011) 147–8.

²⁸ One may compare the simplification of Aristotle’s account of pleasure in *Phys.* VII.3 as a kind of alteration compared to the more sophisticated account of pleasure as a perfection in *Nic. Eth.* X. Wardy (1990) 225 sees *Phys.* VII.3 as in both cases performing ‘an excusable simplification of more subtle ideas’.

perfection is a certain state predicated of the substance but it does itself belong to the category of substance. Moreover, it is not clear that changes that perfect a substance have to be changes that perfect it *qua* the substance it is, that is in terms of its defining attributes. Aristotle speaks rather of perfections as 'natural' (*kata phusin*, 246a14) conditions or conditions with regard to a being's 'proper affections' (*oikeia*, 246b9). While states such as bodily fitness might be said to be a natural state of man, it does not appear to relate directly to a man's essence. If so, we may take there to be a range of different affections that can be perfected as natural or proper to a kind of being, but do not relate to perfecting it as the specific kind of substance it is.

Second, while it is not envisaged in *Phys.* VII.3 that alterations could be perfections, this point can, at least in part, be explained by the extraordinary narrowing of this chapter's conception of a quality.²⁹ We may contrast *Cat.* 8 where qualities include states like knowledge and conditions like health, and so alterations would include changes to and away from such qualities. If, then, one broadens the notion of quality to include alterations which in *Phys.* VII count as perfective changes, there seems no principled reason why some of the specific alterations that *Phys.* VII does recognize should not also count as perfective. Of course, for them to be perfective we would want to add that they are changes to the perfect and best state of the subject.³⁰ But this seems to be exactly how Aristotle in *DA* II.5 presents such 'alterations'.³¹ One way of tying the two texts together is to say that the very aspect of alterations that seems to disqualify them from being perfections in *Phys.* VII.3, the fact that they involve the subject's attaining a different quality, is the aspect that Aristotle seems to accommodate in *DA* II.5 by his notion of an 'alteration' into the thing's own nature and fulfilment. Based on a broadening of the notion of quality and a qualification of the notion of attaining another quality in alteration, *DA* II.5 can include the activity of perception under the notion of perfections.³²

Now Aristotle's accounts of the various sense-faculties seem fully in line with the description of actual perception as an f-change rather than an o-change. The senses in general are described as a mean in relation to the sense-object. The perceptual mean in vision, for example, is itself without colour, just as the eye is colour-less and transparent. It does not have its own colour, rather it comes to realize its own nature as

²⁹ As remarked by Wardy, Viano, and Natali in Maso, Natali, and Seel (2011) 6, 93.115.

³⁰ *Phys.* 246a13–16: ἀλλ' ἡ μὲν ἀρετὴ τελείωσις τις (ὅταν γὰρ λάβῃ τὴν αὐτοῦ ἀρετὴν, τότε λέγεται τέλειον ἔκαστον—τότε γὰρ ἔστι μάλιστα[τὸ] κατὰ φύσιν—ὥσπερ κύκλος τέλειος, ὅταν μάλιστα γένηται κύκλος καὶ ὅταν βέλτιστος).

³¹ *DA* II.5 417b6–7: εἰς αὐτὸ γὰρ ἡ ἐπίδοσις καὶ εἰς ἐντελέχειαν.

³² Another concern one might have is about including perception as an *activity* under perfective changes, since both in the case of substantial changes and changes towards an excellence, Aristotle seems to have in mind changes that lead to a certain stable state of a substance rather than activities which already presuppose the acquisition of such a state (that is, changes from first to second potentiality, in *DA* II.5's terms, rather than changes from second potentiality to fulfilment). However, the comments on pleasures and their relationship to the activity of perception (*Phys.* VII.3 247a–18) show that activities are within the purview of the discussion of perfective changes.

transparent by taking on the colour of something else, the transparent having the ability to do this. It would therefore be wrong to say that in actual perception, by taking on the colour of the sense-object, the sense of sight became other than what it was. Specifically, it is not the case that in seeing the sense of sight loses one colour in order to gain an opposite colour. The sense of sight acquires a colour but by acquiring a colour it is fulfilling a potential to take on the colour of something else. It is not misleading then to describe actual vision as the perfection of the eye's proper capacity, but it would be misleading to describe it as a case of acquiring an attribute through the destruction of its opposite. The capacity of sight to take on colour is after all retained even in vision, whereas in the case say of a cold object becoming hot, the ability to become hot that was a characteristic of being actually cold is lost when something is heated up. It is true generally of the perceptual capacities that they become actualized without losing their defining capacity.

The comparison between actual perception and contemplation is, as it should be, now finely poised: on the one hand actual perception, like contemplation, counts as a fulfilment of a capacity rather than a destructive change in that the action of the sense-object on the perceptual capacity does not involve the loss of that capacity but rather raises it to further level of completion. On the other hand, the sense-object does make the sense-capacity acquire a property, the sensible form, by which it was not previously characterized, whereas in contemplation the intellect is already possessed of the intelligible form. In this sense, there is a stronger case for saying that something happens *to* the perceptual capacity in actual perception than to the intellect in contemplation, though in neither case does what happens mean a loss of any attribute of the capacity as such.

I have argued that the activity of perception should be understood as an f-change, and as a perfective change by extension of the analysis of *Phys.* VII.3–4. This characterization has implications for how we view the relationship of actual perception to any changes in the perceiver's body. Aristotle in *Phys.* VII.3 illustrated the perfections (*teleiōseis*) by the shaping of the statue or the completion of a house by placing the coping stone. If we take the example of completing a house (246a17) it is clear that there is a number of necessary material changes involved in placing the coping stone. Aristotle would not want to say that these accompanying changes define the sort of change that completing the house is. These changes are material causes, rather than the final-formal cause of house. Nonetheless it is clear that some such changes are necessary if a house is going to come about. The case is parallel to the hypothetical necessity whereby there had to be timber, stone, and so on in order for there to be house, in the example of *DA* I.1. Given that the account of the form is distinct from that of the matter and takes priority over it, we can accommodate both the claim that the material changes are necessary and the claim that they are not defining of the change as perfection, since it is the formal-final cause that so defines the change. By parity of reasoning, describing the activity of perception as a completion is quite compatible with its requiring material changes in the perceiver, by hypothetical necessity. We

cannot infer from the characterization of actual perception as a perfection that there are no necessary material changes.³³

Nor can we infer that such material changes are not o-changes. In the case of the completion of the house there are clearly necessary material changes that involve the transition from one opposite to another: the raising of the roof, or the placing of the coping stone, and so on, are clearly changes from opposites, not to mention the planing, welding, chiselling, and so on, that may also be required. Similarly, the material cause of anger, the boiling of the blood, surely involved a change from cold to hot in the blood.³⁴ So when we say the activity of perception is an f-change rather than an o-change, then this seems fully compatible with there being necessary *material* o-changes involved. For when we say that perception is an f-change we are considering the change insofar as it fulfils the formal and final cause of perception.

For all this, it is also true that we cannot infer from the fact that actual perception is an f-change that there positively are necessary material changes in perception, let alone that they are o-changes. For in the case of contemplation, where there is no organ of thought, there is no matter proper to reason which could be seen as altered in actual contemplation. That there may be other accompanying material changes that are necessary for actual contemplation to take place, say material changes involved perception and *phantasia*,³⁵ does not undermine this point. For, as Aristotle indicates in *Phys.*VII.3,³⁶ whether there is a certain alteration happening in connection with a change is a distinct point from whether the change itself should be considered an alteration of that sort. So Aristotle thinks that in learning, the cessation of bodily commotion is required, and in actual contemplation, the cessation of certain bodily obstructions—sleep, drunkenness, and disease—may be required. But Aristotle presents these changes not as part of contemplation as such but as accompanying changes, removals of external preventing circumstances, rather than changes internal to what contemplation itself is. We cannot say, then, that the necessary material changes required for contemplation to occur stand to contemplation as matter to form. The option that there are material changes necessarily accompanying the activity of perception is therefore open given an understanding of perception as a perfecting change. It is open, however, either in the manner in which certain specific material affections are hypothetically necessary for a house to be perfected as a house, like the placing of the coping stone, or in the manner whereby material affections of sobering up may be

³³ These points are powerfully made by Charles (2008), to whom I am indebted.

³⁴ In case one insists on the distinction between getting angry and being angry, and on the difference between those material changes involved in initiating and those maintaining the affection, I repeat the earlier point made about perception, that the alteration required to initiate the change in these cases also seems involved in maintaining the change. You need to keep the kettle on the stove both to heat it up and to keep it boiling.

³⁵ As we shall see in Chapter 11.

³⁶ See 246a4–9.

necessary for contemplation to take place. The notion of a perfecting change itself is neutral on this score.

If Aristotle's argument in *DA* II.5 leaves the question undecided, Aristotle's directions in *DA* I.1 suggest positively, as we saw, that there are material affections hypothetically necessitated by the formal definition of perception. However, one point of relevance to emerge from the discussion of *Phys.* VII.3 is that material affections necessitated by perfective change can belong to a wide range of kinds or categories. More specifically, there need be no categorical match-up between the sort of change the perfection is and the sort of change the necessitated material affection is. Consider two of Aristotle's examples from *Phys.* VII.3, the coming into being of man, a perfective change, will involve alterations in the embryo, that is, qualitative changes (for a start, heatings and coolings, as explained in the *GA*), but is itself a substantial rather than qualitative change. Similarly, the coming into being of an excellence such as health is itself a perfective change to a certain state, but involves various alterations in terms of the hot and the cold in the body. Both of these examples are directly relevant to our understanding of the coming into being of the second-level capacity perception, since this is a perfective change compared to a *hexis* that happens during the formation of the embryo. But it also applies to the activity of perception. We should not think then that such material changes as are hypothetically necessitated by the formal account of perception have to be of the same category or kind as perception itself.

We should think of actual vision, for example, as an assimilation of the sense of sight to a coloured object to the sense, as a kind of coloration that is. But, as has been ably argued by Hendrik Lorenz,³⁷ this is a description on the formal level of what happens to the capacity of vision, as such, not the sense-organ. The capacity to take on the colour of the object is a capacity that defines what vision is as its formal cause. But, given the view of active vision as a perfection of this form, it should be clear that we do not need to look for a corresponding qualitative change in, let alone literal coloration of, the sense-organ, to satisfy the need for a material change whereby the change formally described is realized. One may object that surely the reason why the eyes are transparent is exactly to allow for a literal coloration, since the transparent is what has the ability to take on the colour of something else. But not only is this again to insist that the coloration has to be of the organ as such when rather it is a description of the capacity's assimilation to the object; also the notion of literally colouring the transparent organ is problematic for a number of reasons, one of which is that it is hard to see how a literally coloured organ would retain its transparency and so be able immediately to perceive other colours without distortion. On the interpretation proposed, in contrast, vision may involve a material change which while communicating colour in some way does not do so by literally colouring the eye.

³⁷ Lorenz (2007) 210.

For more concrete examples consider Aristotle's accounts of hearing, smell, and taste. The proper object of hearing is sound, and the capacity to hear is the capacity to be affected by sound as such. Now sound is produced when one object of a certain sort strikes another. The strike generates a motion in the medium surrounding the struck object, some air, let's say. The air reverberates to the motion of the struck object, and when the air extends from the struck object to an animal, it transmits the reverberation all the way to the inside of the animal's ear. The inner ear, the proper organ of hearing, contains confined air which being still is particularly prone to reverberating (420a3–5). Now two points from this sketch should be apparent: one is that there is a kind of spatial motion happening both in the mediation of sound and in the reception of it by the sense-organ: the air somehow reverberates. Now as Burnyeat has made clear,³⁸ this does not mean that there is an object that travels through the medium. But it would be wrong to conclude from this that there is no spatial motion. A hoop moving round does not change its spatial coordinates as a whole, but its parts do change place.³⁹ Similarly, the parts of the medium in sound may change place relative to each other,⁴⁰ without the air travelling as a whole like a wind, in Burnyeat's example.⁴¹ A more appropriate analogy would be the vibration of a chord. To think of air as transmitting motion in some such way is indeed a natural reading of Aristotle's stipulation that 'the object struck must be smooth, so that the air will rebound and vibrate as a mass' (420a25–6).⁴²

The other point that emerges is that while sound is what is heard, the spatial motion whereby the sound is communicated is not heard: when I hear you speak I hear your voice not the sound vibrating in my ear (that would be rather distracting). So, while it is the perception of *sound* that constitutes hearing as such, since sound as such is the proper object of hearing, the process of hearing is one that is realized by a spatial motion in the medium and the inner ear. This dependency of hearing on the motion in the air reflects the fact that sound itself is produced by the air's being struck (419b19–27). In sum, the motion of the air in the inner ear looks like an obvious candidate for the material affection hypothetically necessitated by the formal account of hearing. Hearing, then, described formally, is an alteration, a change with a respective perceptible quality, which necessitates a specific sort of spatial change. As hearing is a perfection, the categorical difference is no surprise.

³⁸ Burnyeat (1995) 429.

³⁹ Contrast Burnyeat (1995) 430: 'Aristotelian physics does not recognize the movement of a wave or a vibration as movement properly so called. Movement properly so called is the passage of a body (a substance) from one place to another (*Ph.* 3. 1, 200^b32–201^a3; 5. 2, 226^a32–^b1). But unlike a wind, a wave or vibration is not (the passage of) a body or a substance.' Aristotle's physics clearly does recognize circular motion in one place as a form of spatial motion, as did Plato, for example, in the *Timaeus* and *Laus X*, so spatial motion does not require that a body changes spatial coordinates.

⁴⁰ Cf. *Phys.* I.3 186a17–18 against Melissus: 'Again, does it follow that what is, if one, is motionless? Why should it not move, the whole of it within itself, as parts of it do which are unities, e.g. this water?'

⁴¹ Burnyeat (1995) 429.

⁴² ... ἀλλὰ δεῖ τὸ τυπτόμενον ὁμαλὸν εἶναι, ὥστε τὸν ἀέρα ἀθροῦν ἀφάλλεσθαι καὶ σείεσθαι.

Now for taste. Flavour is a mixture of the flavoured dry with the wet. In tasting the flavour is communicated to the sense-organ of taste by moistening it. The moistening of the sense-organ is not preparatory for tasting, but part of the tasting of the flavour.⁴³ Now we can make two observations, parallel to the ones just made about hearing. One is that the moistening seems to be a material change in the organ. So the reason why the environment around the tongue should not be too moist already seems to be that it would not allow the tongue to be moistened in tasting. But we can also say that the moistening is not itself what is perceived: we taste flavours, not our tongue getting wet. (We may perceive the tongue getting wet when we taste, but this is a matter of touch.) Flavour is the proper object of taste which defines gustation as its formal cause. So again the material change is distinct from the change as described in formal terms. While there is no categorical difference here, as there was in the case of hearing, between the change described formally and materially—one is an assimilation to flavour, the other, at least in part a wetting—there are still alterations with respect to different qualities.

Finally, smell can be viewed much like taste. Smelling involves a drying and heating of the organ of smell.⁴⁴ (That is why odours are healthy and pleasant to human beings whose upper region tends to get too cold.)⁴⁵ However, we do not smell the dryness or the heat, but the odour. Smelling seems, then, to involve material changes with respect to qualities that are not themselves object of smell and therefore do not enter its formal account.

To conclude, Aristotle seems committed in *DA* I.1 to finding some hypothetically necessary material changes for those affections considered common to body and soul, including therefore perception. Viewing perception as a perfective alteration leaves it quite open what those material changes should be, what category the change may be in and what kind of attribute within a given category it should be. This point was demonstrated by Aristotle's accounts of hearing, smell, and touch. We can see how such necessary material changes feed into the composition of the sense-organ: so the air within the ear should be still so that it can reverberate, the tongue not too moist so that it can be moistened. Therefore we can also see the relevance of these changes to our account of what goes into possessing the various sensory capacities. It is worth emphasizing, finally, the categorical variety of the material changes that go into perception for at least two reasons. First, it underlines that it is not the material change that properly defines perception as the kind of change it is; rather it is the formal description, which *is* a qualitative change. Second, it liberates us from the false dilemma either of construing the material change simply in the cognitive terms of the formal description,⁴⁶ or of finding a material change, which implausibly, like a coloration of

⁴³ As Bolton (2004) 226–7 rightly argues, in response to Johansen (1997) Ch. 4.

⁴⁴ *DA* II.9 422a6–7.

⁴⁵ See *Sens.* 5 449a9–b6.

⁴⁶ So Burnyeat (1995) talks of a physics of form without matter.

the organ of sight, is an alteration exactly in terms of the same qualities that are perceived.⁴⁷ That Aristotle has relatively little to say about the material side of perception in the *DA* is to be expected, given the work's emphasis on defining the soul as such, but it should be clear also from the *DA* that he has conceptual resources to say more, a facility which is exploited in subsequent works.

⁴⁷ See Burnyeat (1992)

The Perceptual Capacity Extended

Setting the Context for *DA* III.1–3

In *DA* II.2 Aristotle points out that the soul is the principle of life. There are, however, different ways for different living beings to be alive. Some living beings have some capacities which others do not. We therefore need to understand the different faculties first in order to understand the different kinds of soul. The rest of the *DA* consequently accounts for the faculties that distinguish the major life forms: nutrition, sense-perception, locomotion, and the intellect (*nous*). First, nutrition is tackled in Book II, ch.4, then each of the five senses receives a chapter in the rest of Book II. In Book III.4–11 Aristotle accounts further for the capacities of intellect (III.4–8) and locomotion (III.9–11). The work ends with two chapters (III.12–13) on why the various faculties belong to different kinds of living being. Books II and III thus seem to be structured according to the plan of explaining each of the capacities that are characteristic of the different kinds of living being, with a conclusion showing why these capacities are required or beneficial for those kinds of being.

I have not yet mentioned the three first chapters of book III of the *DA*. How do they fit into the plan of the work? We might have thought the account of perception complete at the end of Book II, with the account of each of the five special senses and a general concluding chapter in *DA* II.12. There is more, however, to be said about perception than about special perception, since there are more perceptual activities than those of the five senses taken strictly. Aristotle in the next chapters therefore sets about explaining how these other perceptual activities can be explained in extension of the five senses. My concern here is to show how when faced with a variety of perceptual phenomena Aristotle seeks to establish both explanatory economy and adequacy by reference to the five senses.

I read III.2 as a continuation and conclusion of III.1, which is meant to show how the five sensory capacities are sufficient to account for perceptual phenomena other than those properly defining of the five senses as such. The two main phenomena to be accounted for are (1) perceiving that we see and hear (and smell, etc.) and (2) perceiving the difference between the special sensibles, such as white and sweet. Plato in the *Theaetetus* (185a–d) had used the difference between sensibles as an example of the sort of phenomenon that could not be grasped by perception, but only by the soul itself. The aim of Aristotle's argument is to show these phenomena *are*

perceptual; they can therefore be explained by reference to the perceptual faculties. Moreover, we do not need to posit further sense faculties than the five already acknowledged for us to explain how living beings can engage in these activities. We do, however, need to consider how the five senses are related such that they can perceive objects beyond those available to them as special senses. The answer to the question, as we shall see, lies in the common sense, by which the five senses are united.

The end of III.2 and the beginning of III.3 mark a break from the account of the senses to that of the other faculties. Thus Aristotle ends Chapter 2 by saying ‘concerning the principle (*arkhê*) by which we say that the animal is capable of perceiving, let it have been defined in this manner’. Chapters 1–2 have thus dealt with the last issues required here in order to define the principle of perception, by which Aristotle clearly means the capacity of perception. The main business of Chapter 3 is to prepare the account of the intellect in III.4–5. Aristotle does this by showing the distinction of the intellect first from perception: unlike the activities considered in III.1–2 thinking cannot be understood as an exercise of the perceptual faculty. On this point many of his predecessors, Aristotle claims, were wrong. However, nor can intellectual thought be assimilated to belief or *phantasia*. So the intellect is a distinct faculty of cognition, requiring separate discussion, to follow in III.4–5. *Phantasia*, in contrast, turns out to be a function of the perceptual capacity. The contrasting fates of intellect and *phantasia* in III.3 show how in some cases we need to posit new capacities to explain our cognitive behaviour, while in other cases the behaviour can be explained in extension of already acknowledged capacities.

Let me end this section by stressing the importance of seeing Aristotle’s discussion in *DA* III.1–3 in the context of his claim the soul is composed of a limited number of capacities, his faculty psychology, as I have called it. As we have seen, when accounting for the capacities Aristotle takes the activity to be definitionally prior to the capacity (*DA* II.4 415a18–20). However, not all activities of the soul serve to define *distinct* capacities. In the case of the perceptual activities considered in Book II, seeing, hearing, smelling, and so forth, each of these activities clearly defines a distinct capacity. Here Aristotle seems to have already assumed that there are five distinct sense faculties.¹ He has already decided, it seems, when he considers the activity of seeing that this activity will serve to define sight as a capacity distinct from the other senses. However, in Book III, chapters 1–3, we find Aristotle considering a range of perceptual, or quasi-perceptual, activities with a view not to defining further distinct sense-faculties but rather showing how the sense-faculties already accounted for in Book II are sufficient to explain these activities. We may see this stage of the *DA* as motivated by a concern with explanatory economy that is characteristic more generally of faculty psychologies.

¹ Aristotle is highly critical of the atomist view, which, he thinks, makes the other senses dependent on touch (cf. *Sens.* 3 440a). On the other hand, there are cases, as we saw in Chapter 5, where Aristotle himself struggles to differentiate the senses (as in the case of taste and smell) as well as cases where he struggles to maintain the unity of a sense-faculty (touch).

Aristotle wants to show how a variety of psychological phenomena can be explained by reference to a few fundamental faculties. Since the explanatory power of this kind of theory comes in large measure from positing simple causes for complex behaviour, the guiding principle is 'no faculties beyond necessity'. We see the principle at work when Aristotle shows that the cognition of common and accidental sensibles should be seen as an exercise of the perceptual capacity, when the activities of *phantasia* are explained as movements arising from perception, and hence at least indirectly as activities of the perceptual faculty, and when belief is shown to be an exercise of the intellect. Perhaps the culmination of this drive to economy is Aristotle's occasional coupling of the perceptual and the intellectual capacities in a single discerning capacity (*to kritikon*) (432a15–17).

The Completeness of the Special Senses

The first step, in III.1, is to show the adequacy of the five senses for perceiving the various kinds of special sensible. If there are other perceptual activities they are not to be explained then in terms of positing further *special* senses alongside the five we already know about. He argues, accordingly, that there is no special perception of the common sensibles, and hence no requirement for a further special sense for these sensibles. Finally, having accounted for the adequacy of the five senses to perceiving the proper sensibles and the distinctness of proper perception from common perception, Aristotle explains why we need several senses capable of perceiving the common sensibles; III.1 has thus given us a defence both of the sufficiency and the necessity of the five senses in relation both to special and common sensibles.

Aristotle's argument for saying that the five senses are sufficient for us to perceive all the special sensibles has had a bad press. This is not without reason, but the argument is not as weak as has been suggested by some.² Aristotle himself is careful to characterize the argument as a matter of what somebody *might be persuaded by* (424b24), that is, the argument might produce belief or conviction (*pistis*), but there is no claim that it will bring about anything stronger like knowledge.

Still an argument's being 'non-demonstrative' is no excuse for its being bad. Here in outline seems to be Aristotle's reasoning. There are two kinds of special sensible, objects of touch (including taste), which are perceived by direct contact with the perceiver, and objects perceived at a distance, that is the objects of sight, smell, and hearing. We can show that the senses we have are sufficient to deal both with all objects of touch and with all the objects perceptible at a distance. All these objects are properties of simple bodies. But our senses are composed of all the simple bodies there are, and so the senses have by virtue of their composition the ability to take on all the properties of any of the simple bodies, and that means all the perceptible properties there are.

² See in particular Maudlin (1986), whose discontent with the argument motivates him to ascribe it to Aristotle's materialist opponents.

As has been pointed out, this looks like a very bad argument, relying on premises which Aristotle himself would reject. First of all, there seems to be no good reason why having an organ made of water, say, should enable one to perceive all the properties of water. So flavour may be an attribute of water, but we do not perceive it with our eyes, despite their watery composition. Moreover, as Aristotle insists it is not insofar as our sense-organs are made of certain materials, like air or water, that they enable us to perceive, but insofar as they have certain properties: it is *qua* transparent that the water in our eyes enable us to see, it is *qua* something equivalent, the property of being 'transsonant', say, that the air in the ears enable us to hear and so on. So to infer from the fact that the senses are composed out of the four elements that we should be able to perceive all of the possible sensible properties of the four elements, is to miss out on the crucial point, by Aristotle's standards, that the sense-organs only allow us to perceive given the presence of certain specific properties: not all air is transparent (not in the dark), not all air is 'transsonant' (not if there is much commotion), and so on. The argument smacks of Empedocles,³ who said that we perceive air by air, fire by fire, and so on. Empedocles might say that by having senses composed of all the four elements we have the wherewithal to perceive all those elements and all their properties, but surely Aristotle should stay well clear of this argument, given his view that the sense-organs are instrumental in bringing about perception only by virtue of their having very specific attributes which put them in a state of receptivity to very specific sensible properties of the sense-objects, a state of receptivity, moreover, which can only properly be understood by reference to the soul.

These then are basic pitfalls we need to avoid if we are to attribute this argument to Aristotle in any potentially persuasive form. Is there a better reading then? A helpful starting point is the premise that the sense-organs are hypothetically necessary for the sensory capacities and their activities. This means that if there is a sensory capacity there will be a sense-organ specifically suited to this capacity. It also means that if there is no specific sense-organ then there is no corresponding sensory capacity and so, generally, there are only as many sensory capacities as there are sense-organs. Of course, Aristotle is well aware that there are, in nature, organs that serve several capacities, like the elephant's trunk which works as a hand and a nose. We might also point out that one can both taste and touch with the tongue, so even here one organ can serve several functions.⁴ However, in the case of the tongue Aristotle would want to say not that one sense-organ performs two functions, but that one body part contains two sense-organs, one for taste and one for touch since it is the special conditions of moisture around the tongue that help this part to be receptive to flavours. We can still maintain, then, that there is a specialized sense-organ for each of the special senses. Therefore if there is no distinct special sense-organ there is no distinct special sensory capacity either.

³ As Maudlin (1986) 56 points out.

⁴ For the elephant: *PA* II.16 658b33–659a36, II.17 661a25–9; for the human tongue: *PA* II.17 660a17–23.

Can we imagine special sensibles either in the case of touch or in the case of distance perception which are such that the sense-organs we have are not sufficient to enable us to perceive them? Let's start with touch. Aristotle takes the organ of touch to be composed of all the four 'elements'.⁵ By being composed of all the elements the organ of touch has all the attributes characteristic of the four elements: the hot, the cold, the dry, and the wet. These are the primary attributes that define bodies as tangible. Aristotle may therefore think it justified to infer from the composition of the organ of touch that the sense of touch is able to respond to all the tangible attributes. Contrast the case of the eyes and flavour: it was not given simply by the watery composition of the eyes that they would have the attribute in terms of which flavour is received; further conditions had to be in place which were satisfied only by the tongue. However, it does seem reasonable now to say—in a way that was not apparent in our original construal of the argument—that the organ of touch as a body has the attribute by virtue of which tangibles are received, since it is the very attributes that make the organ of touch a body that are also registered in touch, namely the tangible qualities.

The case of the distance senses is more complicated:

all those objects which we perceive through media and not by touching them, but by simple bodies, such as air and water, are such that if several of these while being different in kind are perceptible through one medium, then it is necessary for him who has a sense organ of this kind to be able to perceive both (for example, if the sense-organ is made of air, and air is [a medium] of both sound and colour), and if there are several media of the same [perceptible], as both air and water are of colour (for both are transparent), then he who has either of these alone will perceive what is perceptible through both, but the sense-organs are composed of only these two of the simple bodies (for the eye-jelly [*korē*] is of water, and the sense of hearing of air, and the sense of smell of either of these), but fire either belongs to no organ or is common to all (for nothing is capable of perceiving without heat), and earth either belongs to no organ, or it is most of all and specially mixed with touch. That is why there would remain no sense-organ apart from those of water and air, and, as it is, these some animals have. All of the senses, then, are possessed by the animals that are not incomplete or maimed (for even the mole clearly has eyes underneath its eyelids). Consequently, unless there is some other body and an affection which is of none of the bodies present here, there would be no sense missing. (424b29–425a13)

It is crucial to be clear about the role of the medium in this argument. The medium imposes a condition on any sensible quality which is to be perceived at a distance: the quality has to be such that it can be mediated by the existing media available for distance perception. These reduce to air and water. Note that the condition is not just that the sensible quality can be taken on by air and water; it has to be a quality that can be received in the manner of being mediated. Recall that air or water mediates colour by being affected *qua* transparent, that is, by allowing the colour to appear through it,

⁵ I use the term 'element' for ease of reference, but Aristotle's considered position is that earth, fire, water, and air are composites of more elementary qualities, the hot, the cold, the dry, and the wet; cf. GC II.2.

rather than by becoming an object of sight in its own right, which would defeat the purpose of its being a medium. The question for the mediated qualities is then if there are any other qualities which could be assumed by air and water in this way so as to make themselves perceived. Aristotle takes the answer to be 'no'.

The relevance of the composition of the organ has to be seen in extension of the role of the medium: if there are only such and such qualities that can be mediated by air and water, and our organs are composed in the same way for the same reasons as the medium (note the reference to transparency at 425a1–2), then the only qualities available for distance perception are those we are already equipped to perceive by virtue of having organs composed of air and water. According to this argument, the medium plays the key role in selecting those qualities that can be perceived at a distance. This ensures that if the sense-organs are composed in a way to match the possible media of distance perception, then the sense-organs will also be sufficient to receive the range of possible distal sense qualities.

By interpreting the medium in this way as a sort of 'filter' for the sort of qualities perceptible at a distance, we may have given stronger reasons for thinking that sense-organs that are composed like the media will be sufficient for us to perceive those qualities that can be mediated. It should also be emphasized that this is not a materialist argument in the objectionable way mentioned earlier in that the argument focuses on the medium's role *qua* transparent (or transsonant, or whatever) in filtering the attributes that can be perceived. Take water and air's mediating qualities: there are only so many sensible attributes that can be received and mediated by these, and the sense-organs like the media have these qualities. Also we can better appreciate the structure of Aristotle's argument, in particular why he offers a separate argument for the distance senses, which takes its starting point in the question of which qualities can be mediated by which simple bodies and makes inferences on that basis about which sense-organs can perceive which objects given their composition.

One problem with this line of argument may seem to be that Aristotle allows us to perceive with one sense-organ all the qualities that can be mediated by the element of which it is composed. So an organ made of air ought to be able to perceive all the qualities mediated by air. So we ought to be able to see with our ears. The problem arises from the strategy of inferring what can be perceived by an organ to what is mediated by the element that composes the organ. Aristotle takes this strategy in *DA* III.1 to the extreme. However, elsewhere it is clear that additional constraints operate on the sense-organ. So in *Sens.* 2 Aristotle considers why the organ of sight is made of water rather than air, given that both are transparent, and notes that water is more easily contained than air (438a15–16), and therefore presumably is a more suitable material. *Vice versa*, while sound travels exceptionally well through water, as Aristotle points out in his argument for how well fish hear,⁶ it may also be that there are specific constraints

⁶ See *HA* IV.8 533b4–534a11.

on the composition of the organ of hearing that in this case favour air.⁷ However, the fact that this is an additional constraint on the organ only works against the background of the medium and the organ being determined by the common constraint of which mediating attributes, like transparency, are offered by the simple bodies. Moreover, the bizarre implication that we ought to be able to see with our ears does not undermine the argument in *DA* III.1, insofar as Aristotle is seeking to show that we have organs adequate to perceiving the sensible qualities that can be mediated, since it would be true *a fortiori* that we could perceive both sounds and colours if we could see with our ears.

However, the constraints imposed by the medium on the sensible qualities may now seem more of a problem: why should it not be possible in principle for air and water to mediate other qualities than sound, colour and odour? The answer to this question would have to be found in Aristotle's physics by considering which mediating qualities would follow from their composition. His argument is not meant to exclude the metaphysical or logical possibility of there being missing senses: it is an argument, as we have seen, confined to what follows from the actual material composition of the media of perception, as water and air. Aristotle closes the argument by making this restriction clear: 'unless there is some other body and an affection which is of none of the bodies *present here (entautha)*, there would be no sense missing'. The argument has been based on the actually available simple bodies: if we were to posit others, the argument would have to be revisited.

The Common Sensibles

The argument for the completeness of the five senses is strictly limited to the special sensibles. It leaves open the possibility that there are other sensibles which can be perceived in other ways than by special perception. Aristotle's most important tool in showing a variety of cognitive phenomena to be a function of the perceptual capacity is his distinctions between three kinds of perception according to their objects: special, common, and accidental; and two kinds of perception according to the causal mode: *per se* vs. accidental perception. The latter distinction groups the first three kinds of perception into two: special and common perception are *per se*, accidental perception just that.⁸

The kind of perception which causally and definitionally depends on its sense-objects is *per se* perception; *per se* perception is perception of *per se* perceptibles, that is to say, objects that are by their nature such as to cause perception. This comprises special

⁷ See Johansen (1997) 154–64: it may even be that water is *too* resonant to be ideal for the ear, just as a mean degree of transparency is best for the eyes.

⁸ 'Accidental' in the first distinction applies primarily to the relationship between the properties that are perceived in relation to the special or common properties; in the second distinction to the way in which the properties are perceived: they get themselves perceived insofar as other, *per se* properties cause us to perceive them.

and common perception. Special perception is of sense-objects that we only perceive by one sense modality. So colour, sound, odour, flavour, and heat are special sensibles, and vision, hearing, smell, taste, and touch of these objects are kinds of *per se* perception. Common perception, meanwhile, is of sense-objects that can be perceived by means of more than one sense-modality. So shape, motion, and number are common perceptibles. Both kinds of *per se* perception contrasts with *per accidens* or accidental perception. Accidental perception is of accidental perceptibles. Accidental perceptibles are perceived but they do not cause perception as such. For this they require the action of a *per se* perceptible. So Aristotle says (425b25–7) that we perceive the son of Cleon not because he is the son of Cleon, but because he is white, and the son of Cleon is an accident of white. Perception of accidental perceptibles thus needs the agency of a *per se* perceptible. So when there is no *per se* perceptible like white around to act on your senses you will not perceive the son of Cleon either.

Are the five senses, in some other way than *qua* special, sufficient to explain how we perceive common and accidental perceptibles? Let's start by recalling what Aristotle takes to be involved in positing a capacity of the soul. A capacity is a capacity for change, either passive or active, defined in relation to a certain object, as the formal cause, first of all. Since the object defines the capacity it will also distinguish it from other capacities.

When we consider whether a certain affection of the soul constitutes the activity of a distinct psychic capacity, we need therefore to consider whether this affection has a distinct object in relation to other capacities. It should be stressed immediately that distinct 'objects' have to be understood in terms of the different forms. So in the discussion of the relationship between perception and the intellect Aristotle stresses that while intelligible forms may belong to the same objects as perceptible ones, they are nonetheless, as intelligible, different.⁹

When we move from special perceptibles to other perceptibles the first question that arises, then, is first whether these objects are formally distinct from the special sensibles. In the case of the common sensibles the answer seems clearly yes: change, rest, shape, magnitude, number are distinct perceptibles. They can be perceived by more than one sense-capacity, we can both see and feel a shape, or we can distinguish number by discontinuity in sound or colour and so on. Aristotle concludes that 'it is clear that it is impossible to have special perception of any of these [objects], such as of change' (425b20–1). Since the objects are perceived by more than one sense it is clear that they do not stand to any of these special senses as their proper special object. If number is perceived both by sight and hearing, say, then number cannot be a special proper object of one of these, for a special proper object distinguishes one capacity from another.

⁹ Cf. *DA* III.8 431b24–432a6, with III.4 429b10–22 and III.7 431b12–b19. For further discussion of these passages, see Chapter 11.

It also follows, Aristotle maintains (425b21–2, 425b15), that if there is special perception of the common sensibles, such as change,¹⁰ then ‘we will perceive them just as we now perceive sweet by sight’. The cases would be analogous because the other senses when perceiving change, a special sensible of one sense on this hypothesis, would then be perceiving change the way one now perceives the special sensible of one sense by another, that is accidentally.

But notice that it does not follow from saying that the common objects are not proper objects of *special* perception, that they are not proper objects of *perception*. This was the implication that Socrates drew in the *Theaetetus*, but Aristotle clearly does not think it justified.¹¹ For the common objects are still objects of perception in that they are by their nature such as to cause perception. They are, in other words, *per se* perceptibles, just not in the manner of the special perceptibles.

If they are *per se* perceptibles, and they are not *per se* perceptibles of the special senses, we would expect there to be another sensory capacity of which they are the proper objects. And this is what Aristotle seems to confirm:

We have a common sense (*aisthêsin koinên*) of the common sensibles, and not accidentally; they are not then special perceptibles, for if so we would not perceive other than in the way we said. (DA III.1 425a27–9)

Aristotle is reasserting then the claim that there is a perceptual capacity which has the common sensibles as their proper objects. However, this capacity perceives the common sensibles not in the manner of a special sense, for this would have the unacceptable implication that the special senses perceived the common sensibles accidentally.

Now this conclusion may seem to leave two options open.¹² One is that there is a common sense which is responsible for perceiving the common sensibles. In order to avoid presenting this common sense as a special sense, we would have to allow for it in some way to be participated in by the special senses. Perhaps we could think of it along the lines of a football team consisting of individual players doing something in common. Common perception would be a matter of the individual senses doing something by virtue of their community. This need not mean that the individual senses are not responsible for various acts of perceiving common sensibles or that all the senses need to be involved in every act of perceiving a common perceptible, any more than the whole team is involved in any act of passing the ball, but the individual player’s act of passing the ball presupposes the context of a team playing together. The other possibility is that the common sense is that ability that each of the senses has to perceive certain sensibles. In this case the common sense does not point to a capacity over and above the individual senses, even one that is somehow constituted by the individual

¹⁰ Change is no doubt chosen as the example because it seems to be the one that is involved in all cases of common perception, at least if we read *πάντα κινήσει αἰσθανόμεθα* at 425a17.

¹¹ Socrates’ expression of gratitude to Theaetetus for having saved him a long excursion may indicate Plato’s awareness of the sort of argumentative gap which Aristotle is exploiting, cf. *Theaetetus* 185e.

¹² See the helpful discussion in Gregoric (2007) 69–82.

senses, rather it points to an ability each of them has.¹³ The football analogy would rather be with the ability that each of the players has to control the ball, on top of the different specialized abilities that might be characteristic of the goal keeper, the striker, or the defender as such.

As Pavel Gregoric has argued, the evidence favours the second option. Here are two of the points adduced by Gregoric. First, Aristotle's argument assumes that we perceive the common sensibles by the special senses, and not accidentally so. We see and hear change. The impression remains therefore that it is the individual senses, sight and hearing, that are responsible for common perception, not as special senses but by virtue of an ability they both have in common, that is, both have individually. Second, later in *DA* III.1 (425b4–11) Aristotle asks for what purpose we have several special senses and replies that if we did not, and we perceived everything, say, by sight, then we might be confused about the distinctness of white and magnitude. But as it is, since we also perceive magnitude by the other senses, its distinctness from what we perceive just by sight is clear. The implication is that even if we had only one special sense we might perceive the common sensibles, such as magnitude, but not be properly aware of them as distinct from the special sensibles. But if the perception of common perceptibles were possible even if we only had one special sense, the point of the common sense cannot lie in the way in which it integrates several senses, in the manner of the football team on our first interpretation; rather the common sense must be an ability that the individual senses have even when they are, as it were, playing on their own.

Common perceptibles are proper perceptibles which can be perceived by several senses. It follows from this characterization that while a perceptible cannot define a sensory capacity without being a *per se* perceptible, not every *per se* perceptible enters into the definition or substance of the senses. It is the special perceptibles that define the different senses as such, but this does not mean that everything else they perceive is an accidental perceptible. One way of overcoming the apparent tension between saying, on the one hand, that *per se* perceptibles define the senses and, on the other hand, that the common sensibles are *per se* sensibles, though they do not define the senses, is to say that the common sensibles while they help define perception, do not define the individual senses as such, that is the job of the special sensibles. Aristotle in a passage we shall shortly be looking at (*DA* II.6 418a24–5) says that 'of the *per se* perceptibles, the special ones are strictly (*kuriós*) perceptible, and those to which the substance of each sense is naturally related'. The preference for calling special perceptibles *per se* is based on their definitional relationship to the individual senses; if there is no sense over and above, that is distinct from, those five, we can see why the individual senses are also basic to perception. Again, however, this does not mean that the five senses cannot perceive other objects *per se*, objects which are not defining of them as the *individual* senses they are, but are still perceptible by the various senses as *senses*.

¹³ Gregoric (2007) 82, expounding Simplicius, refers to *koinê aisthêsis* at 425a27 'as the shared ability of the individual senses to perceive the common perceptibles'.

Accidental Perceptibles

The account of common perception shows how the five senses are sufficient to dealing with perceptual objects beyond those that define them individually. Aristotle thus offers a direct reply to the *Theaetetus* by showing how what is grasped through or, as Aristotle mostly prefers to say, *by* the special senses need not be that which characterizes them as the special senses.¹⁴

When we turn to accidental perception this point is stretched to its limit. Accidental perception allows perception to be even richer in content than does common perception. We can see that the white is sweet by accidental perception, though sight as such does not inform us of sweetness, and we can see that this is the son of Diaries, though no special sense as such is primed to grasp this kind of information. Aristotle's discussion in *DA* III.1 refers to both examples as cases of accidental perception, though it is not initially obvious that they allow the same analysis.

The natural starting point for understanding Aristotle's account of accidental perception is his general account of accidental causation in *Phys.* II. We may describe the production of a sculpture in different ways. We may say that a sculptor made the sculpture, or that Polyclitus or a man did so. Of these only the first describes what it was about the cause that made it produce a sculpture. The others describe the cause in ways that are true of it but not in ways that directly display the respect in which it caused the sculpture. Conversely, describing the production from the point of view of the effect, we may say that the sculptor made a sculpture, or that he made a likeness of a man, or the heaviest object in the temple. Again of these it is only the first that describes what the sculptor made as such.

Accidental perception is an accidental effect of a cause which as such brings about *per se* perception. So just as we would say that the sculptor brings about a likeness of a man, because the sculpture happens to be a likeness of a man, so we should say that the sense-object brings about an accidental perception because of what a *per se* cause does. One might be tempted to object that surely one sees that the white thing is the son of Diaries because the white thing is the son of Diaries. So once one specifies the cause fully, as not just the white thing, but the white thing that is the son of Diaries, we would have a cause of *per se* causation, and so of *per se* perception. It may indeed be that we could understand the cause and effect so specified as engaged in *per se* causation; however, it would nonetheless not be *per se* perception, since the son of Diaries is not perceptible as such, and so his involvement in bringing about perception would not be that of a *per se* cause of perception. Compare the case of ancient Greek vase-painter adding his signature to his work. We could say that Exekias, the vase-painter, made a vase-painting signed 'Exekias made me', and that would be specifying the cause as a *per se* cause of the product so described. However, the production so described would no longer be an exercise of *per se* causation in terms of the art of vase-painting, since it is

¹⁴ See *Theaetetus* 184c with Burnyeat (1976).

not by virtue of being a vase-painter that you sign the vase—plenty of ancient Greek vase-painting did not carry a signature—let alone that you sign the vase ‘Exekias made me’. Similarly, saying that the white thing as the son of Diareos is the cause of perceiving the white thing as the son of Diareos might be construed as a case of *per se* causation, how it is not a case of *per se* perception since part of the cause of the perception, ‘being the son of Diareos’ is not a *per se* perceptible.

Aristotle says in *DA* II.6 that ‘one perceives this [the son of Diareos] accidentally because this [the son of Diareos] which is perceived belongs to white, and that is why nothing suffers by the perceptible as such [as son of Diareos]’ (418a20–4).¹⁵ The implication is clearly that the sense-faculty is affected *qua* white but not *qua* son of Diareos. For the son of Diareos is not *as such* perceptible, but only as white or some such thing. Again this does not mean that we do not perceive the son of Diareos. Aristotle’s view is that we do perceive him, only that it is not as a perceptible that he makes us perceive him. Similarly, saying that the vase-painter does not as such add his signature to the painting in no way means, of course, that he does not make the signed artefact, but only that there is some further aspect of him than his being a vase-painter, perhaps pride in his own craftsmanship, that brings about the fact that his product carries his signature. But since the vase carries the signature it makes sense to say that the signature is an aspect, albeit accidental, of the production of a statue, rather than some distinct process. Similarly, since it is the white thing that is being perceived also as the son of Diareos, it makes sense to take the perception of the son of Diareos as an aspect, albeit accidental, of perceiving the white thing.

How about Aristotle’s other case of accidental perception, that of seeing something as sweet? His diagnosis is this: ‘this is because we happen to have perception of both, in such a way that when they coincide we recognise them at the same time’ (425a22–4). He has in mind, then, the case where we are at the same time seeing something, say as white, and tasting it as sweet, and because these two sensory experiences coincide, we can say that we see the sweet or taste the white. It is clear that the perceiver here unifies the two sensory inputs, the sweet and the white, because they coincide. So, a little later Aristotle adds:

The senses perceive each other’s special objects accidentally, not in virtue of being themselves but in virtue of being one, when the perception comes about at the same time in relation to the same thing, for example, when [the perception comes about at the same time in relation to] bile that it

¹⁵ Adopting the reading of D. Hamlyn, which is favoured by the word order. J. W. Smith, in contrast, translates ‘here because the son of Diareos is incidental to the white which is perceived. That is why it in no way affects the senses’ (κατὰ συμβεβηκός γὰρ τούτου αἰσθάνεται, ὅτι τῷ λευκῷ συμβέβηκε τούτο, οὐ αἰσθάνεται διὸ καὶ οὐδὲν πάσχει ἢ τοιοῦτον ὑπὸ τοῦ αἰσθητοῦ). This imports a contrast between the white which is perceived and the son of Diareos, which presumably is not. However, it is odd, if Aristotle means to imply that the accidental perceptible is not perceived, that he in the next line refers to the accidental perceptible as *aisthêton*. Perhaps this is why Smith’s translation refers to the agent in this line as ‘it’ rather than ‘the perceptible’.

is bitter and yellow. For it is certainly not the task of another sense to say that they are both one. (425a30–b2)

It is not clear from Aristotle's language whether he thinks the bile is also perceived, that is whether the content of the accidental perception is 'the bile is both bitter and yellow' or rather 'the bitter is (the) yellow'. The use of adjectival forms agreeing with bile (*kholê*) to describe bitter (*pikra*) and yellow (*xanthê*) may suggest the former.¹⁶ However, even on the other reading, we can maintain the key point that the yellow is perceived as the same as the bitter, or as Aristotle puts it, that the senses by virtue of being one 'say that the two are one'. Now since being the same as the bitter (or the bile, for that matter) is accidental to yellow as the special sensible it is, perceiving that the yellow is the same as the bitter (or the bile) can only be a matter of accidental perception, since there is nothing about the yellow or the bitter as the special sensibles they are to bring about *this* perceptual experience. The case turns out to be relevantly similar to the son of Diares case, because in both cases one thing is said in perception of a special sensible which is not true of that thing as the special sensible it is. Therefore the perception counts as accidental.

But, one might ask, are the two cases not still significantly different in that in the case of the yellow and bitter both attributes are special and *per se* sensibles whereas in the case of the white being the son of Diares, one attribute was not a *per se* perceptible? So unless we bring in explicitly an accidental perceptible such as 'bile' in the first case, are we not introducing a case of accidental perception where nothing that is perceived is an accidental perceptible, while accidental perception ought to be of accidental perceptibles? It is helpful here to recall that Socrates in the *Theaetetus* used sameness as an example of a notion that the soul perceives by itself, for example in the case of perceiving that a sound is the same as itself. The point here seems to be that sameness is a notion which goes beyond what is strictly perceived by the individual senses as such.

Compare also Aristotle's discussion of Socrates' other example, difference, in *DA* III.2:

Nor indeed is it possible to discern by separate means that sweet is different from white, but both must be evident to one thing – for otherwise, even if I perceived one thing and you another, it would be evident that they were different from each other. Rather one thing must assert that they are different; for sweet is different from white. (426b17–21)

The point that it cannot be the special senses as such which perceive the difference between white and sweet seems parallel to the case of perceiving that they are same. In both cases we are dealing with a case of accidental perception, where both terms are special perceptibles. What makes the perception accidental seems to be that the

¹⁶ Also, Aristotle goes on to speak in the next sentence (425b3) about how one may, therefore, be deceived about thinking that the yellow is bile, as if he is reflecting on what was said to be perceived in the previous sentence.

introduction of a *relation* between the special perceptibles, sameness or difference, which is not a proper perceptible.

Aristotle says that the individual senses perceive that the yellow is the same as the bitter by virtue of being one, rather than themselves. It is important to note that the individual senses still remain the subject of perception. He is not saying that another capacity than the individual senses perceive the accidental perceptibles, but that the individual senses perceive as one rather than as individuals. That is also why he emphasizes that it is not the job of *another* capacity (425b2). To return to our football analogy, the senses are now considered not like the individual players who have the same skill but as players who have a skill by virtue of playing together, like the skill of winning matches. This is not a separate capacity but a capacity the capacities have by virtue of working together.

One noteworthy feature of the cases of accidental perception we have been looking at is that they all involve at least one special perceptible. We can see why accidental perception requires a *per se* perceptible as a causal trigger. For general causal reasons, there are no accidental causes and effects without *per se* ones. But is there any reason why a common perceptible should not do as well as a special perceptible? Surely there are cases where we would perceive that 'this shape is a triangle' or 'this movement is that of a lion', that is, cases where accidental perceptibles are perceived as belonging to common perceptibles? Now Aristotle clearly has a preference for special perceptibles as being more proper as perceptibles than the common ones. So he compares the two in *DA* II.6: 'Of the *per se* perceptibles, the special ones are strictly (*kuriōs*) perceptible, and those to which the substance of each sense is naturally related.' The problem in characterizing common perceptibles as *per se* perceptibles emerges when we consider claims such as 'the shape caused me to see it'. As a common sensible, the shape could equally cause me to feel it. It is like saying 'an animal generated a man', rather than 'a man generated a man' in that the cause is not specifically geared to the effect. The difference is that there is no appropriate description of the shape that links it more specifically to its bringing about vision rather than touch, while there is another description of 'animal', namely 'man', which shows why it brings about specifically a man. However, in special perception there is a way of describing the cause which precisely matches up with the effect: colour causes vision as such. It may be because special perception is in this way more properly a case of *per se* perception that Aristotle uses special perceptibles to make the contrast between how the *per se* perceptible affects the senses as such and the accidental ones do not (418b21–4).

Now, one might object that the very circumstances which make it unnecessary to introduce distinct senses for the accidental perceptibles also show how tenuous their status as perceptibles is. Take the example of the son of Diaretes again. Clearly the reason why one can see the white as the son of Diaretes is that one has at some point learnt who he is; typically by somebody telling you.¹⁷ That somebody is the son of Diaretes is clearly

¹⁷ Cf. the role of accidental perception in learning (*mathēsis*) at *Sens.* 437a11–13: hearing contributes *per accidens* to *phronesis*.

then something we *learn*. What persuades Aristotle nonetheless to view such accidental perceptibles as objects of perception is that they are, as we might say, represented in perception. On this reasoning, it is one question whether a certain content has its origin in memory or intellect or some other cognitive activity, it is another question whether the content is perceived or not.¹⁸ We perceive that this white thing is the son of Diareos within one perceptual act, not as an act of seeing plus an act of intellection. Similarly, a musician may reasonably be said to hear middle-c or a doctor looking at an X-ray to see the cancer. Although both kinds of perception presuppose intellectual training, what has been learnt is represented to us as an object of perception. Indeed one might say that part of the intellectual training is making one able to represent what one has learnt as part of the perceptual content, to *hear* the right note, to *spot* the disease. In this respect, Aristotle's insistence that the accidental perceptibles are perceptibles is not unreasonable.

However, we may still worry that Aristotle will be unable to explain how accidental perceptibles can be represented in perception given the mechanisms of perception. In *per se* vision, the colour is taken on by the transparent matter of the eyes, in hearing the sound is received by the still air in the inner ear, and so on. We think of perceptual content as represented by the senses by means of such processes. While the eye then in some sense (as discussed earlier in Chapter 8) becomes white when we see the white thing, it is hard to see how it takes on the form of the son of Diareos. Insofar, then, as we understand vision as taking on the form of the sense-object it is hard to see how the accidental perceptibles become part of the content of vision. However, insofar as accidental perceptibles are remembered, as implied by saying that they are acquired by learning, it seems plausible that we should not look to the special senses as the locus of their representation but rather to the common sense which is responsible for memory and other imagination-based activities. The common sense also registers and coordinates the input of the special senses. So it is likely that the coordination of accidental perceptibles with special perceptibles also happens in the common sense.¹⁹ If so, we should not expect the mechanisms of special perception to accommodate the accidental perceptibles. Rather we need to look at what happens in the central sensorium when memories and imaginings are processed. While this relieves us of the task of finding ways in which the special sense-organs could respond to accidental sensibles, the obvious weakness of the answer is that it pushes the problem one step back: for now we need to explain how wider perceptible contents are realized in the common sensorium. Still, this is a problem we face with the account of imagination anyway.

¹⁸ As Cashdollar (1973) 168 says, 'the ultimate source of the predicate is hardly relevant to the fact of incidental perception itself'.

¹⁹ Gregoric (2007) 199 denies that the common sense is responsible for accidental perception, favouring 'the sensory capacity of the soul which combines perception and imagination'. For the purposes of my argument here it does not matter which of the two as long as it is a capacity that coordinates the input of the special senses with memory.

The common sense is not a capacity that is to be treated like the special senses. In particular, the common perceptibles are not to be treated as proper objects of a common sense. For, as we saw, the common sensibles were perceived by each of the senses. Nor, of course, do the accidental perceptibles provide proper objects for the common sense. We cannot define the common sense as a specific capacity to be acted on by specific objects. Rather we should see the common sense as an aspect of the special senses, an ability they have to perceive a range of perceptibles other than those that define them, insofar as they are unified. If we talk about the common sense as a capacity, we should be careful not to think that this is a capacity that enjoys the status of a distinct psychic capacity; rather we may think of it as a derived or a secondary capacity, a capacity that other capacities have. As we shall see, this is a model of analysis that will apply also to other perceptual phenomena, our ability to perceive that we are perceiving and to imagination (*phantasia*). It is to these phenomena I now turn.

Perceiving that we Perceive: *DA* III.2

Aristotle's account in *DA* III.2 of how we perceive that we perceive should be read as a continuation of the argument of III.1 to show the adequacy of the five senses in dealing with a range of perceptual experiences. Aristotle takes his starting point in the fact, as he sees it, that we perceive that we see and hear, and asks what faculty explains how we engage in this activity. As we shall see, Aristotle worries about this activity partly because it threatens to generate an infinite regress of faculties, a faculty psychologist's nightmare. Aristotle attempts to settle the worry by showing that we do not need another sense-faculty—let alone an infinite regress—in order to explain our ability to perceive that we see; rather the senses that we have already been introduced to in Book II will be adequate to the task.

I translate the key passage at *DA* III.2 425b12–25 as follows:

Since we perceive that we see and hear, it is necessary [b12] that one perceives that one sees either by sight (*opsis*) or by some other [sense]. But the same [sense] will be [b13] of sight and the underlying colour, so that either there will be two [senses] [b14] of the same thing or it [the sense] will be of itself. And furthermore, if indeed the sense that is of sight were different [b15], then either it will go on to infinity or some sense will be of itself, [b16] so that we should do this in the case of the first [sense]. But there is a puzzle (*aporia*): for if [b17] perceiving by sight is seeing, and colour or what [b18] has colour is seen, [then] if something is going to see what sees (*to horón*), then what first sees [or the first thing that sees] [b19] will also have colour. However, it is clear that perceiving by sight is not one thing; for even [b20] when we are not seeing, we discriminate both darkness and [b21] light by sight, but not in the same way. Moreover, what sees is actually (*kai*) coloured in a way [b22]: for the sense-organ is in each case receptive of the sense-object without [b23] the matter. That is why perceptions (*aisthêseis*) and appearances (*phantasiai*) are present in the sense-organs [b24] even when the sense-objects have departed.²⁰

²⁰ In the Greek of Ross (1961): ἐπεὶ δ' αἰσθανόμεθα ὅτι ὁρώμεν καὶ ἀκούομεν, ἀνάγκη ἢ τῇ ὁφεί αἰσθάνεσθαι ὅτι ὁρᾷ, ἢ ἐτέρᾳ. ἀλλ' ἢ αὐτῇ ἔσται τῆς ὁψεως καὶ τοῦ ὑποκειμένου χρώματος, ὥστε ἢ δύο

I start by offering a brief analysis of the argument.

- 1) Premise: We perceive that we see.
- 2) Inference: Therefore it is either (A) by sight that we perceive that we see or (B) by another sense.
- 3) Inference (from (1) and definition of perception):²¹ The same sense will be of both (i) sight and (ii) colour.
(Interpretative note: 3) applies to both options (2) (A) and (B) above.)
- 4) Inferences: If (2) (A), sight will be of itself (by (3) (i)); if (2) (B), two senses will have the same object (= colour by (3) (ii)).
- 5) Further inferences: If (2) (B), either (a) there will for each perception that one is perceiving be another sense by which one perceives that perception, in which case there will be an infinite regress of senses, or (b) some sense will be of itself. But not (a), so (b). If (b), best that the sense that is of itself is sight, so (2) (A). But if (2) (A), there is an *aporia*: sight is of colour or what has colour [cf. *DA* II.7 418a29]; but if so, if what sees (*to horôn*) is seen, it too must have colour.
- 6) *Aporia* defused:
 - a) There is another way of seeing by sight than seeing colours, for when it is dark we discern by sight that we are not seeing.
 - b) What sees is in a way coloured since the sense-organ receives the sense-object without its matter (i.e. the sense-organ receives the form). That is why the perceptions and *phantasiai* can remain in the sense-organs to be perceived later.

Almost every detail of the passage has been disputed, but having provided a full interpretation elsewhere,²² I shall merely outline here how I read the passage.

Aristotle starts by presenting the phenomenon to be explained as a fact: we perceive that we see and hear. The question of how we perceive that we see is presented as a question of ‘by what?’ we perceive that we see. The alternatives are ‘by sight (*opsis*)’ or ‘by another’. *Opsis* could in principle refer to the activity of seeing, but a range of passages strongly suggest that we should take ‘the capacity of sight’ to be the default meaning of *opsis* in the *DA*.²³ As far as the alternative ‘by another’ (*heterai*) is concerned,

τοῦ αὐτοῦ ἔσονται ἡ αὐτὴ αὐτῆς. ἔτι δ' εἰ καὶ ἑτέρα εἴη ἡ τῆς ὁψεως αἰσθησις, ἡ εἰς ἀπειρον εἰσιν ἡ αὐτὴ τις ἔσται αὐτῆς· ὥστ' ἐπὶ τῆς πρώτης τοῦτο ποιητέον. ἔχει δ' ἀπορίαν· εἰ γὰρ τὸ τῇ ὁφει αἰσθάνεσθαι ἔστιν ὁρᾶν, ὁράται δὲ χρῶμα ἢ τὸ ἔχον, εἰ ὁφεταιί τις τὸ ὁρῶν, καὶ χρῶμα ἔξει τὸ ὁρῶν πρότον. φανερόν τοίνυν ὅτι οὐχ ἐν τῷ τῇ ὁφει αἰσθάνεσθαι· καὶ γὰρ ὅταν μὴ ὁρώμεν, τῇ ὁφει κρίνομεν καὶ τὸ σκότος καὶ τὸ φῶς, ἀλλ' οὐχ ὡσαύτως. ἔτι δὲ καὶ τὸ ὁρῶν ἔστιν ὡς κεχρωμάτισται· τὸ γὰρ αἰσθητήριον δεκτικὸν τοῦ αἰσθητοῦ ἄνευ τῆς ὕλης ἕκαστον διὸ καὶ ἀπελθόντων τῶν αἰσθητῶν ἔνεισιν αἰσθήσεις καὶ φαντασίαι ἐν τοῖς αἰσθητηρίοις.

²¹ I discuss the inference below. The distinction here as elsewhere between steps marked here as ‘premise’ and ‘inference’ is loose. Clearly a number of further premises would have to be supplied with every new inference step to make the argument deductively valid. Nonetheless, it is worth marking in this outline how Aristotle presents the structure of the argument by means of words such as *ἐπεὶ*, *ἔσται*, *ὥστε*, *γάρ*, *διό*.

²² Johansen (2005). See Perälä (2010) 43–63 for a helpful commentary.

²³ Cf. II.1 412b27–413a2, *DA* III.2 426a12–15, *DA* III.3 428a6–7. *Metaph.* IX.9 1050a24–5 makes it clear that Aristotle would generally expect his readership to understand *opsis* to mean the faculty of sight, and *horasis* to mean its actuality. Indeed, he assumes that the reader is so familiar with the difference between *opsis* and

we should take Aristotle to understand 'another sensory capacity (*aisthêsis*)'. He is raising this question in extension of *DA* III.1's argument for the adequacy of the five senses in dealing with common and accidental perception. The question now is: do we need more senses to account for our ability to perceive that we see and hear or can we make do with those already recognized? This question is at its most pointed when we envisage the possibility of an infinite regress of senses at b16.

There are two important questions of clarification raised by lines b14–15. The first concerns the expression 'it of itself'. As I understand it, Aristotle has in mind a sense-capacity which perceives itself in that it perceives itself in the activity of perceiving. However, one may object, as does Victor Caston, that this reading involves a change of reference between the pronoun 'it' and the reflexive 'itself', which is 'too harsh'.²⁴ Against this, one may maintain that reflexive expressions such as 'seeing oneself' can allow for the subject and object to pick out different aspects of the same thing. So when we say, for example, that 'I see myself' we do not necessarily mean that the respect with which I see is the same as the respect with which I am seen. I may see my arms with my eyes and we would still be right to say that I see myself because both the eyes and the arms belong to the same thing, me. Similarly, we may say that the sense of sight sees itself, when *it* sees something that belongs to it, in this case the activity of seeing. There are, of course, special cases of reflection of the sort highlighted by Socrates in *Alcibiades* I (133a) where the seeing thing (the pupil) is exactly the same as what is seen. But there is no need to think that Aristotle in *DA* III.2 has this special sort of case in mind when he sees that the sense of sight will be 'of itself'.

Second, commentators have puzzled over why Aristotle assumes that a second sense would also have colour as its object.²⁵ To understand the point we need to go back to *DA* II.12. Perception, Aristotle explained, occurs when the sense-faculty takes on the sensible form of the sense-object. Therefore one cannot perceive the perception of *that sensible form* without also perceiving the sensible form as it is taken on by the sense-faculty.²⁶ So since seeing red, for example, occurs when the sense of sight becomes red in a certain way, one cannot perceive seeing red without also perceiving the sense of sight becoming red in this way. Notice here that Aristotle says that the sense by which we perceive that we see red has to perceive *both* sight and the underlying colour. I take it he has in mind here exactly that since seeing colour is a matter of the sense of sight becoming coloured, both sight and colour have to be perceived by the sense by which

horasis that the terms themselves can on their own be used to convey the distinction between potentiality and actuality.

²⁴ Caston (2002) 768. The observation is used by Caston to support his overall argument that the passage as a whole does not, as traditionally thought, concern the question 'by which capacity do we perceive that we see and hear?' but rather the question 'by which activity do we perceive that we see and hear?'

²⁵ Cf. Hamlyn (1968) 121–2.

²⁶ Cf. the note in Hicks (1907) *ad loc.*: 'one can clearly be aware that one is seeing without being aware of what one is seeing.' But properly speaking seeing is never just seeing for Aristotle; it is, at least, seeing red or yellow or some colour, since seeing is a matter of some such sensible form being received by the sense-faculty.

we perceive that we see colour. The clarification so put anticipates what Aristotle will make explicit a few lines further down (b22–3), namely, that the organ of sight in a way becomes coloured in vision. Second-order perception is more complex than first-order special perception: both colour and sight are perceived. This point will turn out to be significant later.

The way Aristotle presents the two consequences, ‘either there will be two [senses] of the same thing or it will be of itself’ has the ring of dilemma. So we should ask why either disjunct might seem problematic. In the first case, we may take it that the apparent problem comes from Aristotle’s own idea that each special sense has one proper object, colour, for example, in the case of sight.²⁷ A special sense is defined by its exclusive ability to perceive colour as its proper object. It may therefore seem impossible that there could be two senses by which we could perceive colour, if we think of those two senses as both perceiving colour as their proper object. As far as the other option, that there will be a sense that is ‘of itself’, the air of paradox comes from at least two directions. Partly it comes from the worry aired in Plato’s *Charmides* 165c ff, namely that if knowledge is of something, it ought to be of something other than itself, and partly it comes from the apparent conflict between the notion of a sense that is of itself with Aristotle’s own comments in *DA* II.5 (417a2–9) that the senses do not perceive themselves. Aristotle at this stage is setting up *aporiai* concerning perceiving that we see and hear, *aporiai* of the sort that might occur to a reader of Book II.

B15–16 goes on to present a further issue (*eti*, b15) that arises from saying that there is another sense of sight: either (a) there will for each sense-faculty be another sense by which one perceives that sense, in which case there will be an infinite regress of senses, or (b) some sense will be of itself. In the first case, (a), the infinite regress seems generated by applying the premise that wherever an act of seeing is perceived the faculty by which that act is perceived must be other than that responsible for the first seeing. So for any sense, *s*, and any act of perception, *p*, if *s* is responsible for *p*, and *p* is itself perceived in *p*1, then there will be another sense *s*1, different from *s*, such that *s*1 is responsible for *p*1. Apply the principle to any act of perception, *p*_{*n*}, there will be a sense *s*_{*n*} + 1 responsible for perceiving *p*_{*n*}.²⁸

Line b17 draws the consequence that we should make the first sense responsible for perceiving that we see. The previous line sought to establish that, on pain of an infinite regress, there had to be some sense that was of itself. Now one might imagine somebody saying that we should go on postulating higher order senses until a certain level. Say, once we get to the level of the sense that is capable of perceiving that we perceive that we see, we stop and say that this sense is capable of perceiving its own perceptions. One reply to such a person is of course to say that stopping at this level seems arbitrary unless some further story can be told about why the sense that is capable of higher perception of *this* order should also be capable of perceiving itself. In the

²⁷ For the problems, see above Chapter 5, pp. 112–15.

²⁸ For a critique of this reading, see Kosman (2005).

absence of such a story, however, it seems not only arbitrary but also uneconomical to postulate a higher order sense with the ability to perceive itself. For if we ascribe the ability to perceive itself simply to sight, then we need postulate no higher senses at all. Aristotle's preference here for this account underscores the principle 'no faculties beyond necessity'.

B18–19 presents an *aporia* arising from the previous line's conclusion that sight perceives that it sees: as we know from *DA* II.7 (418a29), sight is of colour or what has colour. Therefore, if what sees (*to horôn*) is seen, it too must have colour. In 'sight is of colour or what has colour' it is 'what has colour' that is picked up in the argument (cf. 'it too must have colour'). The implication, then, of saying that sight sees that it sees is that sight must somehow have colour when it sees.

It is right to note, with Hicks,²⁹ that Aristotle at b18–19 is introducing an *aporia* that has its origin in Plato's *Charmides* 167c–169c. Socrates is here finding difficulty with the proposal that temperance might be understood as a kind of self-knowledge, understood as a knowledge that is of knowledge without also being of some other object known. To highlight the difficulty Socrates introduces two kinds of analogous case. The first is that of a power such as 'greater than' being greater than itself (and thereby simultaneously being smaller than itself) and 'double than' being twice itself (and thereby simultaneous being half itself). The second is the case of sight which if it saw itself would itself have colour.

The *aporia* will be dissolved once we have a proper understanding of the subject matter. Lines b20–5 accordingly proceed to offer a two-fold solution to the *aporia*. In b20–2 Aristotle points out that there is another way of seeing by sight than seeing colours, therefore we do not have to conclude that what sees must have colour if it is seen. In b22–4, on the other hand, he argues that there is a way in which what sees becomes coloured in sight. There need be no difficulty in principle, therefore, in accepting that what sees has colour.

B20–2. The first sentence establishes that while 'seeing' may entail 'perceiving by sight', 'perceiving by sight' does not entail 'seeing'. We may thus assert the first disjunct in line b13 (i.e. 'one perceives by sight that one sees') without implying that one *sees* that one sees, with the consequent *aporia*. What shows that we may perceive by sight without seeing is the case of discerning darkness and light, even when we are not seeing. In understanding this point it helps to remember that in *DA* II.7 light is not considered the object of sight but its medium. Colour is the proper object of sight, light being that through which the colour appears. Perceiving the light is in this sense not strictly speaking a case of seeing. *A fortiori* perceiving darkness does not count as seeing.³⁰ Yet Aristotle also acknowledges that we do not discern light and

²⁹ Hicks (1907) *ad loc.*; cf. Caston (2002) 772–3.

³⁰ Note, incidentally, that 'discerning' (*κρίνειν*) does not itself imply a higher cognitive achievement than mere seeing, which is also referred to by Aristotle as *κρίνειν* (e.g. 426b10, 427a20).

darkness in the same way (*oukh hōsautōs*, b22).³¹ The contrast he has in mind here is not clear. One plausible way of explaining it would be to say that when one perceives light (but is not seeing anything coloured) one perceives in the light the absence of any colour, whereas when one perceives darkness, one perceives the absence of the light. If so, the difference between the two kinds of perceiving also relates to the difference between two ways of perceiving that one is not seeing, one by way of perceiving that there is no sense-object, the other by way of perceiving that there is no light. We have then a connection between the claim that we perceive both darkness and light by sight and the claim that it is by sight that we perceive that we are seeing. For if it is by sight that we perceive that we are not seeing (either by the absence of a colour or by the absence of light), then that seems to lend support also to the idea that it might be by sight that we perceive that we are seeing: for the same faculty would then be able to monitor both kinds of case. The proper distinction between ways of seeing is then a way not only of dodging the implication that perceiving by sight has to be perceiving colour; it is also a way of showing, via the negative example, how the sense of sight may be involved in registering both its own activity and its own inactivity with respect to first-order perception.

B22–4 considers the alternative case where we are seeing. One may take this as a rival solution to the *aporia* insofar as it accepts what b20–2 sought to avoid, namely, the implication that what sees is coloured. However, we may also read b20–2 and 22–4 as offering complementary answers to the *aporia*: b20–2 concerning the case where we are not seeing, but still exercising our vision, and b22–4 dealing with the case where we are seeing. The two answers, from this point of view, are offered not as contrasting or competing answers to the *aporia*. Rather they are meant to exhaust the two possible scenarios where we either perceive that we see or that we do not see, where the second scenario turns out to strengthen Aristotle's case that such second-order perception is due to sight and not to another sense.

B22–4 says first that what sees becomes 'in a way' (or 'as if': *hōs*) coloured. For 'coloured' Aristotle uses the perfect (*kekhrōmatistai*), which indicates that what sees is coloured as a result of having been coloured, more specifically as the result of having been coloured through the activity of seeing. Thus Aristotle goes on to explain the claim (*gar*) by referring to the idea familiar from *DA* II.12 that each sense-organ is capable of receiving the form of the sense-object without its matter. Saying just what is involved in the sense-organ becoming 'in a way' coloured would take us back into the discussion of Chapter 8 about material changes in perception. But two points, against the background of that discussion, are worth making. The first is that 'in a way' would be unmotivated if the coloration of the organ was of the literal sort sometimes proposed. It makes better sense either if the coloration is of the non-literal sort

³¹ With Simplicius, Sophonias, and Hicks, and against Themistius and Rodier (1900), I take οὐχ ὡσαύτως to indicate a contrast between discerning light and darkness by sight, and not between discerning colour and darkness by sight.

proposed by Burnyeat,³² or if it is of a material sort which shares something with a literal coloration but is not it.³³ The second observation concerns just what is referred to by the ‘sense-organ’ (*aisthêtêrion*) at 425b23. If it is to make any sense in the argument, it has to refer back to ‘what sees’, *to horôn*,³⁴ since the claim that the *aisthêtêrion* takes on the sensible form is supposed to show the way in which *to horôn* is coloured. But if this is supposed to help solve the *aporia* at b17–20, then *to horôn* must in turn refer to the same thing in b22 as in b19. However, do we not have to say, then, that *to horôn* in b19 must refer to the sense-organ and *not* to the sense-faculty, as I suggested earlier? I think not. Recall that Aristotle’s primary conception of the *aisthêtêrion* at *DA* II.12 is that in which the *dunamis* to receive the sensible form is present.³⁵ Referring to the sense-organ may therefore be taken to include reference to the sense-faculty. Taking the sense-faculty to be included in the reference to the sense-organ seems particularly plausible at b23, since Aristotle mentions the sense-organ as what is capable of taking on the sensible form of an object without its matter, the very capacity that in *DA* II.12 defined the sense-faculties (*aisthêseis*, 424a18).³⁶

However, even if there is no contradiction between *to aisthêtêrion* at b23 and taking *to horôn* at b19 to refer to the faculty of sight, we still need to explain why Aristotle at b23 shifts to referring to the matter of sight. I take it that the primary reason for the reference to the sense-organs here is the attempt to locate the perceptions and imaginings. If you ask *where* the sensory impressions remain after the sense-object has departed it seems appropriate not to point to the sense-faculty, which *qua* faculty has no location, but to its organ, which as corporeal does have a location.³⁷ So we know from

³² Cf. Burnyeat (1995) 427: ‘Given our earlier discussion about the transparent medium being coloured in a derivative way, it will come as no surprise to learn that, when we see, the eye is coloured in a way (3. 2, 425b22–3). All this implies that the effect on the eye is the same as the effect on the medium, as one could already infer from lines 419a13–15 in 2. 7. The colour appears to the eye of the subject who perceives it. The effect on the eye is a quasi-alteration just like the quasi-alteration in the transparent, because the eye too is actually transparent.’

³³ Cf. Bolton (2004) 228–9. Without endorsing Burnyeat’s interpretation in general, Bolton emphasizes that ‘the as if coloration in perception must involve an item of *phantasia*’. He cites the passage at *Insomn.* 2 (459b13–18) where Aristotle refers to the afterimage one has of the sun when, having looked at it, one shuts one’s eyes. Bolton says it makes sense here to say that my eye is as if coloured red because of ‘the way my eye appears or presents itself to me in *phantasia* when I am aware of the afterimage’ (229). We might think of the material changes involved, at least in part, as those involved in *phantasia*, for which see the next two chapters.

³⁴ Cf. Osborne (1983) 404, n. 15: ‘There is a textual discrepancy here which enables some editors to read *τὸ ὁρᾶν* in place of *τὸ ὁρῶν* in one or both occurrences at 425b19, but this does not provide a satisfactory solution, since if the comment at 425b22–3 (which must refer to *τὸ ὁρῶν*) is to be any kind of solution to the difficulty in 425b19 it had better refer to at least a possible referent of the terms in b19, and preferably to the same term.’

³⁵ *αἰσθητήριον δε πρῶτον ἐν ᾧ ἡ τοιαύτη δύναμις* where *ἡ τοιαύτη δύναμις* picks up on *τὸ δεκτικὸν τῶν αἰσθητῶν εἰδῶν ἅνευ τῆς ὕλης* in 424a18.

³⁶ The passage does not therefore present an objection to the earlier claim that it is the sense-faculty that is properly receptive of the colour in vision rather than the sense-organ as such. However, if there are necessary material changes happening in actual vision it may be necessary for these to linger if the coloration of the sense-capacity is itself to be perceived, as envisaged here.

³⁷ I note the parallel references in *Insom.* 459a26, 459b6 to the sense-organs as that in which the perceptual affection happens and remains after perception.

the *Phys.* (212b7ff) that it is the body that has place *per se* while the soul has place only accidentally.³⁸ The suggestion at *DA* III.2 425b24–5 is that the perceptions and *phantasiai* are capable of remaining in the sense-organs because the sensible form is received by a sense-organ which has a location and is therefore such as to be able to provide a location for the perceptions and *phantasiai*.³⁹

There is in b24–5 an implicit contrast between the absence of the sense-objects (*apelthontôn tôn aisthêtôn*) and the presence of the perceptions and *phantasiai* in the sense-organs. I take this contrast to be relevant to the overall argument of the passage in the following way: even when the external sense-object has gone its sensible form is available for perception or cognition because it has been received by the sense-organ. The sense-organ thus becomes the vehicle for the sensible form *vice* the external sense-object. Where the sensible form in normal perception is realized in the external sense-object, it is, upon actual perception, also realized in the sense-organ. This ultimately is why we can ascribe one's ability to perceive one's own seeing to sight understood as the faculty by which one perceives a specific sensible form, colour. For when sight perceives itself seeing, it is also perceiving colour, the sensible form that it perceives in first-order vision.⁴⁰ However, perceiving that one sees cannot simply be a matter of perceiving colour; for it also requires perceiving *one's own sight* as coloured. In this respect, the content of second-order perception is more complex than that of first-order perception, where vision as a special sense can simply be of colour. Hence if perceiving that one sees red is an exercise of the sense of sight, then it cannot simply be an exercise of sight as a special sense, that is, as the sense by which we perceive colour.

For Aristotle the fundamental reason why first-order and second-order perception differ in being is that their contents differ. For it is by their kinds of content that we determine the different kinds of perception. In first-order vision you see colour or what has colour, where as in second-order vision you see not just colour or what has

³⁸ Cf. *DA* I.3 406a4–12, where it is suggested that the soul only moves locally insofar as the body it is in so moves, and *DA* II.12 424a25–8, where Aristotle first identifies the *aisthêtêrion* as that in which (*ἐν ᾧ*) the sensory faculty is located and then says that it is the same as the faculty but different in being: 'for what perceives must be a magnitude (*megethos*), but neither the being of what can perceive nor the sense (*aisthêsis*) is a magnitude but a certain *logos* and faculty (*dunamis*) of that thing [sc. the magnitude]'. Insofar as having place requires having magnitude (points have no place), and only the sense-organ has extension, it is proper to ask for the location of a sense-faculty by asking where its organ is.

³⁹ I take *aisthêseis* here to be equivalent to the affections (*pathê*) or changes (*kinêseis*) of the sense-organ as such. Compare the use of *alloiôsis* and *pathos* in a similar context at *Insom.* 459b4–9 (cf. also *DA* II.12 424a30). This understanding of *aisthêseis* goes naturally together with its coupling here with *phantasia*, which Aristotle understands as *κίνησις ὑπὸ τῆς αἰσθήσεως τῆς κατ' ἐνέργειαν γιγνομένη* (*DA* III.3 429a1–2). The use of the plural *aisthêseis* at 425b25 should therefore occasion no confusion with the use of *aisthêsis* in the singular at 425b16 to refer to the sense-faculty.

⁴⁰ To the objection that there is now another problematic shift of reference in the notion of the sense perceiving itself, this time between the sense-faculty and the sense-organ, I reply by referring to the above answer; just as there need be no problem in accepting that the sense-faculty can see itself insofar as it is actualized, so there should be no problem in admitting that the sense-faculty sees itself insofar as it materially realized. Aristotle's idea that the sense-organ is the sense-faculty at a lower level of potentiality, whilst the actuality of perception is the sense-faculty at a higher level of actuality, serves after all to emphasize that these are three different states or aspects of the same thing.

colour; you see that you are seeing colour, where that perception is of both colour and sight, as b13–14 said. Notice, initially, that this difference is not best expressed by saying that second-order perception has a propositional content, ‘that you are seeing’, whereas first-order perception does not. For Aristotle is prepared to express the content of first-order perception of colours by a proposition, for example ‘that [there is] colour’ (418a15). Moreover, there is no reason to think that Aristotle is only interested in those cases where we perceive that we are perceiving the so-called special sensibles, such as colour or sound; presumably he is as interested in cases such as perceiving that we are seeing that this white thing is the son of Diares, or that this white object is moving towards me, that is, in cases involving awareness of accidental or common sense-objects. First-order perception may, then, particularly in the case of accidental perception, have a complex content. So the difference between the contents of first-order and second-order perception need not lie in the one being simple and the other complex. Rather the difference lies in fact that the content of second-order perception will always have *greater* complexity than the first-order perception that it takes as its object, since the second-order perception conveys not just the content of the first-order perception but also the information that one is perceiving that content.

It seems that second-order perception will therefore qualify as a form of accidental perception, insofar as it involves not just, say, perceiving colour but attributing this colour to one’s own sense of sight. This corresponds to standard cases of accidental perception where we say, for example, that the coloured thing is the son of Diares.⁴¹ Now as far as Aristotle’s argument in *DA* III.2 is concerned, he should be able to admit that second-order perception is a form of accidental perception without that undermining his argument that we perceive that we see by sight. Aristotle suggested that we can say that we perceive by sight that we see because in vision our sense of sight becomes in a way coloured. This suggestion does not commit Aristotle to saying that we perceive that we see by sight understood exclusively as a special sense. He may say that we perceive accidentally by sight that we see and what makes it appropriate to say that it is by sight that we see this is that part of this content is something we see by means of sight as the special sense it is. For part of what we see is a colour, the colour of our sense-faculty. The fact that in second-order perception this colour is further attributed to my sense of sight makes the overall content of the perception an accidental perceptible. However, we can still insist that it is by sight that we perceive this accidental perceptible. Compare, again, the discussion of accidental perception in *DA* II.6 418a20–5:

A thing is said to be an accidental perceptible, for example, that the white thing is the son of Diares. For it is perceived accidentally, because the son of Diares belongs to the white, which is perceived. That is also why no sense is affected as such by the [accidental] sensible. Rather

⁴¹ *DA* II.6 418a16, a20–3.

amongst the *per se* sensibles the proper sensibles are primarily sensibles, and they are the sensibles in relation to which the substance of each sense is by nature.

Now when I see that the white thing is the son of Diares, it is clear that what affects my sense of sight as such is the white. What makes the perception as a whole an act of accidental perception is that that perception also attributes 'son of Diares' to the white. It is appropriate to say that I *see* that the white thing is the son of Diares because part of the content, the white, is a proper sensible of sight. However, it is only an act of accidental perception because the content is not exhausted by the *per se* sensible, white; rather an attribute which is not a *per se* sensible, 'son of Diares', is attributed to the white. It is clear, then, that because of the presence of colour in the content of my perception we can say here that I *see* that the white is the son of Diares, but also that we can only say that I see the whole content, 'that the white is the son of Diares', accidentally.⁴² The case of perceiving that we see is similar. Because there is a way in which our sight becomes coloured in sight we can rightly say that it is by sight that we perceive that we see.⁴³ However, the content of such second-order perception is not exhausted by the colour since one perceives what has colour as one's own sense of sight.⁴⁴ We can say that we perceive that we see accidentally by sight.

There is a strong parallel, on the account I have offered, between perceiving that one sees and perceptual memory: remembering is perceiving that one has seen or heard in the past, and so on, where perceiving that one sees or hears is perceiving that one is currently seeing or hearing. In *Mem.* 1 449b15–23 Aristotle says,

Memory is of what happened, whereas nobody would claim to remember the present when it is present, such as this here white when one sees it, nor what is being contemplated, when one happens to be contemplating it and having it in mind, but one says only that one perceives the one and knows the other. But when one has knowledge and perception without the actual objects (*anew tón ergón*) one thus remembers of a triangle that its angles are equal to two right angles, in the one case because one learnt or contemplated it, in the other because one heard or saw it or some such thing. For it is necessary when one actualises one's memory to say thus in one's soul, that one heard or perceived or grasped this earlier.

Aristotle goes on to explain that this ability to recognize that one has perceived something earlier requires a sense of time, and is therefore not available to all animals: 'for always whenever one's memory is active, one perceives in addition to perceiving

⁴² Compare the manuscript reading at *DA* III.1 425a28–30: οὐδαμῶς γὰρ ἂν ἡσθάνομεθα ἀλλ' ἢ οὕτως ὥσπερ εἴρηται τὸν Κλέωνος υἱὸν ἡμᾶς ὁρᾶν.

⁴³ We should not be put off by the disanalogy here that 'the son of Diares' is an object of learning, whereas 'that one sees' is surely not; for accidental perception may also, as we saw, operate on *per se* perceptibles such as 'that the white is the sweet'.

⁴⁴ Aristotle expresses the content of accidental perceptions such as 'the white (thing) is the son of Diares'. Here the term indicating the proper sensible appears first as the subject of the proposition, reflecting, it seems the causal primacy in such perception of the colour as a proper sensible. Accordingly, we may prefer to express the content of second order perception as, for example, 'the red is my sense of sight'. I am grateful to Pavel Gregoric for comments on this point.

that one saw this or heard or learnt this, that one did so earlier, and earlier and later are in time' (450a). What is striking for our purposes is the parallel between second-order perception and memory. Both are an exercise of higher-order perception, involving perceiving one's own acts of vision or hearing, and so forth. The key difference is that in memory one is perceiving *that one saw* or *that one heard* (Greek aorist);⁴⁵ in the case of normal second-order perception we perceive that we see or hear (present tense).⁴⁶ It is tempting therefore to see memory as a parallel case to the second-order perception identified in *DA* III.2, namely the case in which one perceives one's own perceptual states with the added information that these occurred in the past. It is possible that the final lines of the passage at 425b11–25 is inviting us to make exactly this sort of connection with memory: the occurrence of the sensible form in the *sensorium* is such that not only can it be perceived currently that we are perceiving, the continued presence of the sensible form also ensures we can also perceive at a later stage both what we perceived in the past and that we perceived it.⁴⁷

DA III.2 leaves us with the impression that it is legitimate to hold sight responsible for perceiving that one sees. The conclusion of the passage underlines that perceiving that one sees may be thought of as a function of the faculty of sight and not of a different sense-faculty. We have thereby strengthened the argument in *DA* III.1 that no senses have been left out of the account in Book II. Aristotle has made a case for thinking that the five senses as defined in Book II are adequate also to explaining the phenomenon of perceiving that we see or hear or smell, and so on. However, *DA* III.2 has also left us with a question as to how sight can be responsible for second-order perception insofar as its content is more complex than simple colour. In this respect the passage points forward to the discussion both later in *DA* III.2 (426b8–427a16) and in the *Somn.* of the way in which we perceive contents that go beyond those of special perception. As we shall see, the answer to the question lies not in positing further senses but, again, in understanding the way in which the five senses work together.

The outcome of *DA* III.2 425b12–25 appeared to be that we should say that it is by the sense of sight that we perceive that we see, and by implication that it is by hearing that we perceive that we hear and so on for the other senses.⁴⁸ However, in *Somn.* 2 (455a12–22) Aristotle seems to deny this proposition explicitly:

But since in the case of each sense there is something peculiar and something common, for example, on the one hand, seeing is peculiar to sight, hearing to the sense of hearing, and in the same way for each of the other senses, whilst, on the other hand, there is also a certain common capacity that attends upon all of the senses, by which one perceives both that one sees and that one hears—for surely it is not by sight that one sees that one sees and it is not by taste or sight or

⁴⁵ ὅτι εἶδε, ὅτι ἤκουσεν.

⁴⁶ *DA* 425b 11: ὅτι ὁρώμεν καὶ ἀκούομεν.

⁴⁷ Compare here ἀπελθόντων τῶν αἰσθητῶν at *DA* 425b24 with ἄνεν τῶν ἔργων at *Mem.* 449b19.

⁴⁸ Caston's (2002) 779, n.59 comment that 'Aristotle could not plausibly say that we "taste that we taste" or "smell that we smell"' (i.e. smell that we *are smelling*) seems to me to beg the exact question we are trying to answer. Cf. also Kosman (1975) 503.

both together that one discerns and is capable of discerning that the sweet things are different from the white but by some part that is common to all the sense-organs. For there is one sense and the controlling sense-organ is one, but the being is different for the sense of each kind, such as sound and colour.⁴⁹

How are we to explain the apparent contradiction between the *Somn.* and *DA* III.2? Hicks and Osborne underline the inconclusiveness of the discussion in *DA* III.2: Aristotle never asserts in *DA* III.2, in so many words, that sight is responsible for perceiving that we see. So they take his considered view instead to be that of the *Somn.*: it is the common sense by which we perceive that we see. My response shall be a compatibilist one according to which the conflict between *DA* III.2 and the *Somn.* does not arise once we understand how it can be true to say that we perceive that we perceive both by sight and by the common sense.

Let us start by considering the context of *Somn.* 2. Aristotle wants to argue in this chapter that sleep is an affection of the sensory faculty. His view is that since sleep affects all the senses together, sleep must be an affection of something the senses have in common, that is, the common sense. If not, it would be possible to perceive by one of the senses even whilst asleep, but we observe that there is no perception by any of the senses when we sleep. But what does Aristotle mean by a common sense? He stresses the fact that the common sense is common in that it belongs to all of the five senses;⁵⁰ similarly, the common sense-organ is a part that is common to all the sense-organs.⁵¹ More precisely, however, Aristotle also says that there is one sense whose being differs for each kind of sensible. The common sense is thus not a sense in addition to, or over and above, the individual senses; it is rather the sense by virtue of which the five senses are one. Alternatively, we could say that there is one sense that is also distinguished as five senses insofar as there are five different kinds of proper sensible.

Aristotle's comment that 'it is not by sight that one sees that one sees' should be read in the context of this emphasis on the unity of the senses. Aristotle is contrasting what can be said of the individual senses as special (*idiai*) or different and what can be said of them as having something in common (*koinon*). What Aristotle wants to deny is that it is by sight as a *special* sense that we see that we see. I note two points here. First, consider the other role Aristotle assigns in the passage to the common sense, discerning that sweet is different from white. This too, Aristotle says, is a kind of perception that can be put down to neither taste nor vision. Now clearly what Aristotle means here cannot be that vision and taste are not involved in the perception that white is different from

⁴⁹ ἐπεὶ δ' ὑπάρχει καθ' ἐκάστην αἴσθησιν τὸ μὲν τι ἴδιον, τὸ δέ τι κοινόν, ἴδιον μὲν οἷον τῇ ὄψει τὸ ὄραν, τῇ δ' ἀκοῇ τὸ ἀκοῦν, καὶ ταῖς ἄλλαις ἐκάστῃ κατὰ τὸν αὐτὸν τρόπον, ἔστι δέ τις καὶ κοινὴ δύναμις ἀκολουθοῦσα πάσαις, ἣ καὶ ὅτι ὄρᾷ καὶ ἀκούει αἰσθάνεται (οὐ γὰρ δὴ τῇ γε ὄψει ὄρᾷ ὅτι ὄρᾷ, καὶ κρίνει δὴ καὶ δύναται κρίνειν ὅτι ἕτερα τὰ γλυκεῖα τῶν λευκῶν οὔτε γέυσει οὔτε ὄψει οὔτε ἀμφοῖν, ἀλλὰ τινι κοινῇ μορίῳ τῶν αἰσθητηρίων ἀπάντων· ἔστι μὲν γὰρ μία αἴσθησις, καὶ τὸ κύριον αἰσθητήριον ἓν, τὸ δ' εἶναι αἰσθήσει τοῦ γένους ἐκάστον ἕτερον, οἷον ψόφον καὶ χρώματος)...

⁵⁰ 455a16: τις καὶ κοινὴ δύναμις ἀκολουθοῦσα πάσαις.

⁵¹ 455a19–20: τινι κοινῇ μορίῳ τῶν αἰσθητηρίων ἀπάντων.

sweet. For white and sweet are after all the proper objects of vision and taste. Rather what makes the discrimination of white from sweet a matter for the common sense is that neither of these senses as special senses is capable of discerning the difference between their proper objects, whether you take them individually or together.⁵² Now let's return to the question concerning, as Aristotle first put it, 'that by which one perceives both that one sees and that one hears'.⁵³ It is natural to take Aristotle's phrasing here to indicate the capacity by which one perceives *both* that one sees *and* that one hears. What we have here, is the analogue, at the level of second-order perception to the case, at the level of first-order perception, of perceiving something as both sweet and white. It is the analogue because it brings together in one perception two different sense-objects, that one sees and that one hears. In this case the perception that one both sees and hears does not bring together the proper objects of taste and sight, sweet and white, but the activities of the senses themselves. It is, thus, as reasonable to say that one and same special sense cannot coordinate the perceptions that one sees and that one hears as it is to say that one special sense cannot coordinate the perceptions of white and sweet.

Now let's consider again, in extension of this reading, the claim that 'surely it is not by sight that one sees that one sees'. Here there is apparently no coordination of the activities of sight and other senses, like hearing. Nonetheless, in extension of the previous lines, it is natural to read Aristotle as denying that it is by sight as a *special* sense that we perceive that we see. If so, he is not excluding that sight is involved in perceiving that we see; he is just saying that insofar as sight is involved it is not involved as a special sense, but rather by virtue of its integration with the other senses.

Now in the previous section I argued that perceiving that we see red appeared to be a form of accidental perception in that the content involved not just red but also an attribution of that red to one's own sense of sight. I think we can see now that the implication of this point was already that perceiving that one sees could not simply be a function of sight as a special sense. For sight as a special sense was concerned merely with colour, and not with information such as whether this or that thing is coloured. There is therefore nothing new in the *Somm.*'s suggestion that it is not by sight as a *special* sense that we see that we see. Rather the question that arises is whether *DA* III.2 is compatible with the *Somm.*'s suggestion that it is by the common sense that we see that we see, given the way *DA* III.2 highlighted the role of sight in perceiving that we see. I think two more comments will help show that the two works are compatible.

First, there is the key point that the common sense does not constitute a further sensory faculty over and above the special senses. The *Somm.* is clear that the common sense is not different in number from the special senses, it is only different in being. The common sense does not constitute 'another' sense (*hetera aisthêsis*) of the sort referred to in *DA* III.2. Given the way *DA* III.2 sets up the question, 'Is it by sight that we

⁵² 455a19: οὐτε ἀμφοῖν.

⁵³ 455a16–17: ἥ καὶ ὅτι ὁρᾷ καὶ ἀκούει αἰσθάνεται.

perceive that we see or by another sense?’, there is therefore no contradiction between the answers given by the two works. The admission of the common sense does not add to the number of senses; nor, therefore, does it constitute the first step in a regress argument.

Second, it makes good sense to say that the way in which the content of second-order perception goes beyond that of first-order perception points exactly to the involvement of the common sense. Once we accept the notion that we can perceive by sight that we see as a matter of *accidental* perception, it is easier to understand exactly why this kind of accidental perception would draw on the input of the common sense. It is the common sense, after all, that allows us to make contrastive judgements between perceptibles. It is, as the *Somn.* points out, by the common sense that we discriminate white things from sweet things. We can now see the relevance of Aristotle using exactly this parallel at the point when he wants to say that it is by the common sense that we perceive that we see. For if perceiving that we see involves identifying vision amongst a range of sense modalities, hearing, taste, touch, and so on, then we would expect the common sense to be involved just as we expect it to be involved in discriminating (*krinein*) amongst a range of kinds of first-order sensible, flavour, colour, sound, and so on.⁵⁴ When it comes to making discriminations between different genera of sensible (as opposed to species of the same genus of sensible) we expect the involvement of the common sense, not just in first-order discriminations such as white is different from sweet, but also in second-order discriminations of the sort that seeing is happening rather than tasting. Moreover, it is exactly this element in the second-order perception that makes it other than a case of special perception. That is, it is the element of our perceiving that *we see* red rather than that we see *red* which gives second-order perception a richer content than special perception. Therefore the manner in which second-order perception involves accidental perception goes well, on my reading of *DA* III.2, with the point in the *Somn.* that it is by the common sense that we are capable of grasping that we see.⁵⁵

⁵⁴ It is natural, as do Ross and Siwek, to place a comma at 455a17 and read: οὐ γὰρ δὴ τῇ γε ὁφεί οῖον ὅτι ὁρᾷ, καὶ κρίνει δὴ καὶ δύναται κρίνειν ὅτι ἕτερα τὰ γλυκέα τῶν λευκῶν. However, we know from elsewhere that ὁρᾷν is also considered κρίνειν (*DA* 426b10). It is tempting to take Aristotle as implying this point here, since it would ease the transition in thought in the sentence from seeing to discerning. Moreover, it would support the point I am making here that Aristotle thinks that perceiving that one sees involves a discrimination amongst the different sense-modalities. I am grateful to Philip van der Eijk for comments on this sentence.

⁵⁵ Parts of this section have been revised from Johansen (2005).

10

Phantasia

As sentient beings we humans do not just perceive the immediate environment around us. We also remember our experiences, envisage situations we would like or not like to be in, we dream, and we visualize abstract notions. All of these behaviours involve for Aristotle an ability he refers to as '*phantasia*'. The term is traditionally translated as 'imagination'. The translation has been contested by some scholars who think that the association with 'images' is misleading, either because it favours visual representation over other perceptual modes, or because it is too specific in favouring one kind of perceptual representation where we should think more generally of a capacity for mental representation.

To be sure, Aristotle is explicit that *phantasia* is not restricted to visual images but comes from all the special senses (*Insomn.* 461a26–30). Indeed, he presents *phantasia* as a movement that follows each kind of perception—special, common, and accidental—so not just vision and not just special perception (428b27). There are, on the other hand, passages in Aristotle that strongly suggest that images are central to his understanding of *phantasia* and passages where he sees a particularly strong connection between *phantasia* and vision. So he says that *phantasia* is derived from *phōs* ('light') because we don't see without light, and vision is most of all perception (429a2–4); he accounts for dreams as *phantasmata* and their distorted quality as being like the distortion of reflections in disturbed liquids (*Insomn.* 461a14–30), and he explains memory as a retention of perceptual *phantasmata*, which in remembering we approach as if looking at or through an image (*eikōn*) (*Mem.* 450b11–451a2). Aristotle seems to take his lead here from Plato, who in the *Philebus* (40a–b) treated *phantasmata* as paintings.¹

The representation of images provides the model, then, for *phantasia* in these various contexts. We may think of the visual imaging as a core case of *phantasia* to which a certain broader notion of representation is related. A comparison would be with the way the word 'aspirin' may be used generically for a range of different kinds of painkiller, while there is still a core example with a certain kind chemical structure from which the other medicines borrow the appellation. Against the background of Aristotle himself privileging visual images in his account of *phantasia*, it is not unreasonable to continue using the traditional translation 'imagination', though I shall prefer

¹ Cf. also the use of *phantasmata* for reflections in *Republic* VII 532c1.

to transliterate the term here. As a matter of translation after all, if not interpretation, it is not unreasonable to reflect an etymology on which Aristotle himself insists.

Now Aristotle's approach to imagination in *DA* III.3 is as we would expect it to be given his discussion of common perception, accidental perception, and perceiving that we see. He attempts to explain it by virtue of one or more of the recognized capacities of the soul.

If then it is imagination in accordance to which we say that something imagined occurs to us and unless we are saying something metaphorically, then is imagination is one capacity or state of those according to which we discriminate and are right or wrong? For such are perception, opinion, knowledge, and intellect.²

The text is sometimes quoted in support of saying that *phantasia* is a capacity. But its being a capacity, like perception, is of course only one of the options mentioned. Moreover, we have two options in reading the relative clause 'according to which . . .': either (a) as a defining sub-clause which would leave the possibility open that *phantasia* could be a capacity or a state but not one of those by which we discern and are right or wrong or (b) as a non-defining sub-clause in which case we would tend to take a negative answer to the question (if that is what it is) to mean that *phantasia* is not a capacity or state.

The best way of getting our bearings with these options is to read on. For the passage serves as an introduction to the following text which goes through the various options. First, he argues against saying that *phantasia* is perception (428a8–16), then against saying that it is knowledge or intellect (a17–24), then against the Platonic option that it is belief with, or through, perception (428a24–9). He concludes that '*phantasia* is neither one of these [the four mentioned] or from these' (428b9). Now a key feature of all the arguments against identifying *phantasia* with these four is whether the *phantasia* relates to 'discriminating and being right or wrong' in the ways in which these other four relate to it. So it is an argument against *phantasia*'s being perception that the former is mostly wrong, while the latter is true, and that we say that we are not perceiving something precisely that it appears (*phainetai*) to us. The identification of *phantasia* with either knowledge or intellect is similarly hampered by the last two always being right while, as we saw, *phantasia* is also false. Finally, belief (*doxa*) is ruled out by the way in which belief sometimes rightly contradicts appearances. In a famous example, the sun appears to be a foot across while our belief is that it is larger than the inhabited earth.

Now since the veracity or otherwise of *phantasia* plays a key role in the refutation of all the four options it is tempting to read 'according to which we discriminate and are right or wrong' as a defining sub-clause. In that case, it is still hard to see how *phantasia* as a capacity could be the same as perception or intellect. Indeed, Aristotle is careful to

² εἰ δὲ ἔστιν ἡ φαντασία καθ' ἣν λέγομεν φάντασμά τι τῶν γίνεσθαι καὶ μὴ εἶναι κατὰ μεταφορὰν λέγομεν, <ἀρα> μία τις ἔστι τούτων δυνάμεις ἡ ἕξις καθ' ἧς κρίνομεν καὶ ἀληθεύομεν ἢ ψευδόμεθα; τοιαῦτα δ' εἰσὶν αἰσθήσεις, δόξα, ἐπιστήμη, νοῦς.

specify that the phenomenon of dreams shows that *phantasia* is neither perception as a capacity nor as an activity (428a6). Moreover, there are some animals that do not have *phantasia* while clearly they do have, as animals, the capacity to perceive (428a10–11). However, what has not been ruled out, on this reading, is the possibility that *phantasia* could be a state or other attribute of perception or intellect but not one of those by which perception or the intellect is involved in discriminating or being wrong or right. Another point to note here is that it has not necessarily been excluded from this argument that *phantasia* could be deemed wrong or right or even discriminating—we were after all told that *phantasia* is mostly wrong. For in the phrase ‘according to which we discriminate and are right or wrong’ ‘according to which’ (*kata*) allows of a causal reading such that *phantasia* would be what makes us discriminate or be wrong or right. It may well be that that when in a state of *phantasia* about something we do, as a matter of fact, represent it as being something which may or may not be true, but that it is not the business of *phantasia* to represent things truly (or not). Similarly, *phantasia* may in fact involve discrimination,³ at least in some cases, but it is not essential to *phantasia* as such to do so. As we shall see, this is no idle possibility. Nor has it been ruled out, of course, that *phantasia* is some capacity other than perception and intellect. And this has appeared to many scholars to be Aristotle’s view. I am not going to claim that *phantasia* is not in some sense a capacity for Aristotle, and indeed ‘capacity’ is a handy word for any ability that we have by virtue of our souls. However, I do want to argue that *phantasia* is not a capacity according to the criteria that Aristotle has so far used in the *DA* to characterize capacities.

Let’s turn, then, to Aristotle’s positive characterization of *phantasia*, which begins here:

But since it is possible when this thing here is being changed for another thing to be changed by this, imagination seems to be a kind of change and to come about not without perception, but for those which perceive and of the things of which there is perception, and it is possible for the change to come about by the activity of the perception, and it is necessary for this [the change] to be similar to the perception, this change would not be possible without perception nor would it belong to those which do not perceive, and [it is possible that] what has imagination does and suffers many things in accordance with it and it is possible for it to be true and false.⁴

³ See *MA* 6 700b19–21 where *phantasia* is described as capable of discriminating: καὶ γὰρ ἡ φαντασία καὶ ἡ αἴσθησις τὴν αὐτὴν πῶ καὶ χώραν ἔχουσιν· κριτικὰ γὰρ πάντα, διαφέρουσι δὲ κατὰ τὰς εἰρημένας ἐν ἄλλοις διαφορὰς. Since *phantasia* is a motion arising from the three different kinds of perception (*DA* III.3 428b10–429a3), one would expect it to preserve in some manner the discriminations made in those perceptions. *Phantasia*, however, is not mentioned as a member of the discriminating capacity (*dunamis*) at *DA* III.9 432a15–16 but only reasoning (*dianoia*) and perception, which may, again, suggest that it is not a cognitive capacity in its own right, but derivative from perception.

⁴ *DA* 428b10–17: ἀλλ’ ἐπειδὴ ἔστι κινήθentos τοῦδὲ κινεῖσθαι ἕτερον ὑπὸ τούτου, ἡ δὲ φαντασία κίνησις τις δοκεῖ εἶναι καὶ οὐκ ἄνευ αἰσθήσεως γίνεσθαι ἀλλ’ αἰσθανομένοις καὶ ὅν αἰσθησις ἔστιν, ἔστι δὲ γίνεσθαι κίνησιν ὑπὸ τῆς ἐνεργείας τῆς αἰσθήσεως, καὶ ταύτην ὁμοίαν ἀνάγκη εἶναι τῇ αἰσθήσει, εἴη ἂν αὕτη ἡ κίνησις οὔτε ἄνευ αἰσθήσεως ἐνδεχομένη οὔτε μὴ αἰσθανομένοις ὑπάρχειν, καὶ πολλὰ κατ’ αὐτὴν καὶ ποιεῖν καὶ πάσχειν τὸ ἔχον, καὶ εἶναι καὶ ἀληθὴ καὶ ψευδῆ.

Three points emerge of particular concern to the question of whether *phantasia* is a distinct capacity. The first is that *phantasia* is a change (*kinêsis*). Now we are familiar with the claim that perception is a kind of change from *DA* II.5. Indeed, this point seems to be presupposed here, since Aristotle takes *phantasia* to be a change that follows on the change of perception. In the case of perception, the change is of course the activity of the capacity to perceive. So one might think, by parity of reasoning, that *phantasia* too could be the activity of a capacity to imagine. However, Aristotle's point that *phantasia* comes about as a result of the activity of perception seems to preclude this option. It seems to imply that there is one activity of perceivers which is perception and then there is a further activity in consequence of that activity. We have, as it were, a chain effect at the level of activities with no mention of a further capacity being realized. Aristotle's emphasis that *phantasia* happens to perceivers suggests that *phantasia* is something that happens to us by virtue of our perceptual capacity, further to the activity of perception.

The second related point is that *phantasia* has the same objects as perception. This point is developed through the division of *phantasia* into three kinds of changes following upon the activity of the three kinds of perception, according to whether their objects are special, common, and accidental perceptibles. Now the priority of objects criterion, as introduced in *DA* II.4, said that two capacities were different if and only if they had different objects. One might still think, when Aristotle at 428b13 says that *phantasia* is 'of things of which there is perception', that there is some leeway for *phantasia* to have a different approach to perceptible objects. Perhaps *phantasia* is related to perception, rather like the way intellect is related to perception, if we recall that Aristotle says that the two have different proper objects, even though the intellect in thinking about abstract objects is still concerned with attributes that belong to perceptible objects. Similarly, *phantasia* could be of perceptible objects while not of perceptible objects *qua* perceptible, but *qua* 'imaginable', let's say.

The analogy with intelligibles, however, is misleading. The claim that the perceptible and intelligible objects are the same is true only *de re*; *de dicto* intelligibles are distinct from perceptibles. We do not perceive this box as perfectly square but this is how the mathematician thinks of it. In contrast, Aristotle consistently stresses the similarity in content between perception and *phantasia*. So he said in *DA* III.2 (425b23–5) that there were *phantasiai* present in the sense-organs also after the departure of the perceptible objects since the sense-organ was receptive of the sensible without the matter: the implication is that *phantasia* deals with same perceptible form that is received in actual perception. Aristotle highlights the way *phantasia*'s causal dependency on perception leads to a similarity of content not just at 428b14, but also later in *DA* III.3 when he says that 'because imaginations remain and are similar to the perceptions, animals do many things in accordance with them' (429a4–6, cf. 425b24–5). And as *Mem* and *Insomn.* go on to explain it is through *phantasia* that we remember or dream about what we have perceived during the day. It is this similarity in content to perception that leads Aristotle to understand *phantasia* as a function of the perceptual capacity, rather than of a distinct capacity in its own right.

In *Mem.* 1 Aristotle argues that we do not remember intelligibles as such, though we may remember the image that accompanies thinking of them. He says that

Thus it is clear that the cognition of these objects is by the primary faculty of perception, and memory even of intellectual objects does not occur without an image (*phantasma*) and the image is an affection of the common sense. Thus memory belongs accidentally to the intellect, and essentially it belongs to the primary capacity of sense-perception. (450a11–14)⁵

The striking feature of this passage for our purposes is that it is enough for memory to be concerned with images (*phantasmata*) for Aristotle to conclude that memory is an exercise of the first perceptual capacity (*to prōton aisthēton*).⁶ The background to this inference is that *phantasmata* retain what has been perceived, and by relating this *phantasma* to the past we can remember what has been perceived.⁷ Remembering is, then, one of the ways in which animals do things in accordance with *phantasia*. Putting these points together, we can say that *phantasia* serves its purpose in memory precisely by retaining what has been perceived as it was perceived. Because *phantasia* deals with the same content of perception we can infer that *phantasia* belongs to the perceptual capacity, rather than some other capacity.⁸

The role of *phantasia* in memory is also instructive in another way. One might object to the claim that *phantasia* belongs to the perceptual capacity because it deals with perceptible objects as follows. If *phantasia* is really this closely tied to perception should we not think of *phantasia* as itself being perception? In the case of memory, we see that a *phantasma* allows for a certain use that is not accommodated by perception as such. Perception as such is of the present (449b13): perception happens now insofar as there is an external perceptible object acting on us as such. *Phantasia* retains the information conveyed, the sensible form, when the object has moved on. The content of *phantasia* is similar, then, to that of perception but *phantasia* does not serve to represent that content in the present environment. I shall say more about this claim shortly, for now the important point is that we can maintain the argument for *phantasia* belonging to the

⁵ ὥστε φανερόν ὅτι τῷ πρώτῳ αἰσθητικῷ τούτων ἡ γνώσις ἐστίν· ἡ δὲ μνήμη, καὶ ἡ τῶν νοητῶν, οὐκ ἀνευ φαντάσματός ἐστιν, <καὶ τὸ φάντασμα τῆς κοινῆς αἰσθήσεως πάθος ἐστίν>· ὥστε τοῦ νοῦ μὲν κατὰ συμβεβηκὸς ἂν εἴη, καθ' αὐτὸ δὲ τοῦ πρώτου αἰσθητικοῦ.

⁶ Note the difference between saying, as Aristotle does, that the *phantasma* as such belongs to the sensory capacity and that it belongs to the sensory capacity as such. It may be essential to a *phantasma* that is an exercise of the perceptual capacity, but that does not mean that it is essential to perceptual capacity to have *phantasmata*.

⁷ Similarly, in the discussion of dreams he says that ‘even when the external object of perception has departed, the impressions it has made (*aisthēmata*) persist (*emmenei*), and are themselves objects of perception (*aisthēta*)’ (460b2–3).

⁸ This helps explain why there is no *phantaston* (to coin a word) corresponding to *aisthēton* or *noēton* in Aristotle to indicate the proper object or content of *phantasia*. The tendency of the term *phantasma* for Aristotle is to indicate what appears to us (*phainesthai*) (cf. *Insom.* 460b16–20, *DA* III.3 428a1–2 with Schofield (1978) 118–20), though this offers no indication of a specific kind of content. I am grateful to Klaus Corcilius for raising this issue.

perceptual capacity in terms of shared content without reducing the activity of *phantasia* to that of perception.

The third point of concern as to the question whether *phantasia* is a capacity, is that it appears not to be an efficient cause. I have argued that both the nutritive and perceptual capacities could, in different ways and to different degrees, be seen to be playing a role in the efficient causation of nutrition and perception. Actual perception was the result of the action of the sense-object but it also made sense to involve the perceptual soul in the efficient causation insofar as it primed the living being to a high level of potentiality of perception. There is nothing corresponding to this in the account of *phantasia*. *Phantasia* is presented purely as an effect with active perception as its efficient cause. It seems therefore that *phantasia* lacks the efficient causal role that we expect of the capacities of the soul given the argument of *DA* II.4. If *phantasia* is in some sense a capacity, it is not a capacity *on a par* with the nutritive and perceptual.

Aristotle sums up his account of *phantasia* as follows: ‘If then nothing other than imagination has the features mentioned (and this is what has been said), imagination would be a change brought about by perception in activity’ (428b30–429a2).⁹ How does this account relate to Aristotle’s original statement, or query, that:

If then it is imagination in accordance to which we say that something imagined occurs to us and unless we are saying something metaphorically, then is imagination is one capacity or state of those according to which we discriminate and are right or wrong? For such are perception, opinion, knowledge, and intellect.

Taken as a statement the passage can only be accepted with considerable qualifications. *Phantasia*, we have seen, is not itself a proper capacity, but belongs to a capacity, namely perception. *Phantasia* is capable of being right and wrong, as is perception, though it has not been shown in what way *phantasia* is right or wrong. Given that *phantasia* does not serve, as does perception, to represent the *present* environment as being such and such, we should expect a different story about just how the perceptual contents represented in *phantasia* are assessed as wrong or right. Finally, *phantasia* itself has been characterized as a change (*kinêsis*), not as a state (*hexis*) or a capacity (*dunamis*). Could *phantasia*, however, also be described as a state? In the *Nic. Eth.* Aristotle offers us three options ‘Since the things that come to be in the soul are of three kinds, affections [*pathe*], capacities [*dunamis*], and states [*hexeis*], virtue must be one of these’ (1105b20–2, transl. after Taylor). There is some pressure on us, then, not just from *DA* III.3 to answer this question. Now, if we think of a *hexis* as an acquired fixed dispositional state, like knowledge or virtue, it seems unlikely that *phantasia* could be so described. For *phantasia* occurs as and when the activity of perception brings about a further change in us. *Phantasia* may be as fleeting as a dream image, hardly a fixed dispositional state. In terms of the tripartition in the *Nic. Eth.* it seems more promising to characterize

⁹ εἰ οὖν μηδὲν ἄλλο ἔχει τὰ εἰρημένα ἢ φαντασία (τοῦτο δ’ ἐστὶ τὸ λεχθέν), ἢ φαντασία ἂν εἴη κίνησις ὑπὸ τῆς αἰσθησεως τῆς κατ’ ἐνέργειαν γιγνομένην.

phantasia as an affection, as Aristotle himself does on at least two occasions (*DA* 427b17, *Mem.* 450a1). A passage in the *Phys.* III.3 helps bridge the gap between the characterizations of *phantasia* as change and as affection:

Perhaps it is necessary that the actuality of the agent and that of the patient should not be the same. The one is ‘agency’ and the other ‘patiency’; and the outcome and completion of the one is an ‘action’, that of the other an ‘affection’ (*pathos*). Since then they are both motions, we may ask: in what are they, if they are different? (202a22–5, transl. after Hardie)¹⁰

Change may be understood, then, as an affection (*pathos*) in the patient. This is not an inappropriate description of *phantasia* since it is a change in the perceiver caused by the activity of perception.

The Final Cause of *Phantasia*

I have been concerned to argue against the claim that *phantasia* is a full capacity. The most important argument has been the absence of a distinct object of *phantasia* to serve as its formal cause. The objects of *phantasia* were instead borrowed from perception in a way that showed *phantasia*’s derivative status as a change and affection of the perceptual capacity. I also suggested that *phantasia* by being a product of perception lacked the efficient causal role that Aristotle ascribes to the other capacities of the soul. I want now to strengthen this argument by showing how *phantasia* also from the point of view of final causation depends on the capacity of perception. If this argument is correct, it strengthens the thesis that *phantasia* is to be explained by reference to the perceptual capacity, on the basis of the capacity’s characteristic role as the formal, final, and efficient cause of perceptual experiences.

Let me start with a characterization of the final cause of perception. This job is complicated by the fact that Aristotle recognizes two notions of a final cause: “the for the sake of which” is said in two ways, as the “of which”, and as the “for which” (415b20–1). The standard illustration of the difference is medicine is health as the ‘of which’ and the patient as the ‘for which’. I shall refer to them respectively as the end and the beneficiary.

Now in the case of perception it seems fairly easy to identify both end and beneficiary. The end of perceiving is the perception of perceptible features of our present environment, colours, sounds, motions, numbers, people, and so on. Alternatively, we may use the language of discriminating (*krinein*): perception serves to discriminate between perceptible features of our environment. So described, the final cause coincides, as we would expect in natural changes, with the formal cause of perception, the reception of the perceptible forms.

However, perception also serves to inform *us*, animals and humans, about our surroundings. This brings us to the beneficiary, the animal or human being who benefits

¹⁰ ἀναγκαῖον γὰρ ἵσως εἶναί τινα ἐνέργειαν τοῦ ποιητικοῦ καὶ τοῦ παθητικοῦ· τὸ μὲν δὲ ποίησις, τὸ δὲ πάθησις, ἔργον δὲ καὶ τέλος τοῦ μὲν ποιήμα, τοῦ δὲ πάθος. ἐπεὶ οὖν ἄμφω κινήσεις, εἰ μὲν ἕτεραι, ἐν τίνι.

from perception. Now Aristotle spells out in some detail in *DA* III.12–13 how we benefit from the various senses. Touch, as we have seen, informs us of tangible qualities, which are the basic qualities of matter as such. Some of these are harmful to us as bodies, say the very hot. Since by perceiving these qualities we can take evasive measures, touch helps us survive. Other tangible qualities nourish and satisfy us, the dry and hot as food, the cold and the wet as drink (414b12–14). Taste, as a form of touch, is particularly geared to picking out nourishment (414b14). The distance senses benefit us also by informing us of dangers and opportunities in our environment. The distance senses are also necessary for the survival of those animals that move around. This is because they need to be able to spot dangers before they bump into them and spot food so that they can move towards it (*Sens.* 436b18–437a1). However, apart from this role in helping us survive, the distance senses also contribute to our living well (*to eu*) (434b23–5). This seems to be a point that particularly applies to intelligent creatures: ‘For those who happen to have knowledge (*phronesis*) they [the distance senses] belong for the sake of living well. For they reveal many differences, from which knowledge of both intelligibles and things to be done arise’ (*Sens.* 437a1–3).

Now it is important to underline that in these contexts Aristotle is considering the final causation of the senses from the point of view of the beneficiary. Touch is good for *all animals*, because it helps them survive, distance senses are good for *locomotive animals* also because they help them survive, distance senses are useful for *intelligent animals* because they help them acquire knowledge. Some of these goods the senses can realize by performing the proper function that defines them, that is by fulfilling their end as the senses they are, but others they cannot. Consider here Aristotle’s discussion in *Sens.* 1 of the difference between sight and hearing:

Of these [sc. distance senses], sight as such contributes most to the necessities, while hearing accidentally contributes most to knowledgeable thinking. For the capacity of sight announces many and varied differences because all bodies partake of colour, so that also the common perceptibles are perceived through this capacity (by “common” I mean magnitude, shape, change, number), while hearing only announces the differences of sound, and for a few also the differences of voice. But accidentally hearing makes the greatest contribution to thought. For speech (*logos*) by being heard is responsible for learning, not as such [sc. as heard] but accidentally. For speech is composed of words [or ‘names’, *onomata*], and each of the words is a symbol (*sumbolon*). That is why of those who have been deprived of either sense from birth, the blind are wiser than the dumb and deaf. (*Sens.* 1 437a1–17)¹¹

¹¹ τοῖς δὲ καὶ φρονήσεως τυγχάνουσι τοῦ εὖ ἔνεκα· πολλὰς γὰρ εἰσαγγέλλουσι διαφοράς, ἐξ ὧν ἡ τε τῶν νοητῶν ἐγγίνεται φρόνησις καὶ ἡ τῶν πρακτῶν. αὐτῶν δὲ τούτων πρὸς μὲν τὰ ἀναγκαῖα κρείττων ἡ ὄψις καθ’ αὐτήν, πρὸς δὲ νοῦν κατὰ συμβεβηκὸς ἡ ἀκοή. διαφορὰς μὲν γὰρ πολλὰς καὶ παντοδαπὰς ἡ τῆς ὄψεως εἰσαγγέλλει δύναμις διὰ τὸ πάντα τὰ σώματα μετέχειν χρώματος, ὥστε καὶ τὰ κοινὰ διὰ ταύτης αἰσθάνεσθαι μάλιστα (λέγω δὲ κοινὰ μέγεθος, σχῆμα, κίνησιν, ἀριθμόν), ἡ δ’ ἀκοή τὰς τοῦ ψόφου διαφορὰς μόνον, ὀλίγοις δὲ καὶ τὰς τῆς φωνῆς· κατὰ συμβεβηκὸς δὲ πρὸς φρόνησιν ἡ ἀκοή πλείστον συμβάλλεται μέρος. ὁ γὰρ λόγος αἰτιὸς ἐστὶ τῆς μαθήσεως ἀκουστός ὢν, οὐ καθ’ αὐτὸν ἀλλὰ κατὰ συμβεβηκὸς· ἐξ ὀνομάτων γὰρ σύγκειται, τῶν δ’ ὀνομάτων ἕκαστον σύμβολόν ἐστιν. διόπερ φρονιμώτεροι τῶν ἐκ γενετῆς ἑστερημένων εἰς ἑκατέρως τῆς αἰσθήσεως οἱ τυφλοὶ τῶν ἐνέων καὶ κωφῶν.

The passage marks the important contrast between what sight does as such, and what hearing does accidentally. All bodies are coloured, but only some make a sound. Since sight is therefore reliably activated in the presence of bodies, it can also reliably inform us of the common sensible properties of bodies. Sight is therefore more valuable than hearing from the point of view of what is necessary. I take the thought to be that sight will reliably tell you, for example, that five big grey objects are moving towards you, and so you can get away before the wolves get you. Hearing, in contrast, contributes more to the quality of our lives by allowing us to learn through listening to speech. But what we are really learning from are not the sounds as such but what they represent to us because we have reason (*phronesis*).

When Aristotle discusses the teleology of the senses in these contexts he takes the viewpoint of the beneficiary, which is distinct from the viewpoint of the end that defines the senses as such. The beneficiary may find further uses for the senses other than the ones that define them as such. We may use here the analogy with the arts: horse-riding as a skill may have the proper end of handling a horse well while in motion, but if the beneficiary is a cavalryman, then he will find further uses for horse-riding, winning a battle, say. The perspective of the beneficiary allows us to view the defining ends of the senses as instrumental in relation to the good of the beneficiary as a higher end. The distance senses illustrate the point well: they serve animals insofar as they are moving. This is not an end that defines the distance senses as such (as we saw, that would be the registering of colours, sounds, and smells) any more than warfare is a proper end of horse-riding, but it is a use of the distance senses *for animals with locomotion*.

I want now to suggest that *phantasia* plays an important role in showing, first, how the distance senses can perform the role of guiding locomotion in animals, and, second, how the senses contribute to knowledge for animals with an intellect. The upshot of the account will be that while *phantasia* contributes to the use of perception in these ways for animals and humans, and *phantasia* to that extent is important and useful in accounting for how animals and humans live, *phantasia* does not have a final cause of its own. This is a further reason for not thinking of *phantasia* as a capacity in its own right, but as a psychological activity to be explained in extension of the perceptual capacity.

Aristotle mentions two ways in which the distance senses are good for living beings: they help us move or, in the case of humans, to act and also they to help us know. *Phantasia* allows perception to perform both of these tasks. It does so by allowing the perceptual faculty to represent perceptual contents which are not made available by present sense-objects. *Phantasia* allows us to retain perceptual information in memory, and to process further such information in projections and generalizations. It allows perceptible contents to be treated offline as it were, in projections, comparisons, and generalizations. However, to get to a point where we can assess the significance and truth value of this claim we need to take a step back and consider Aristotle's characterization of *phantasia* more broadly. The evidence on *phantasia* in Aristotle is extremely diffuse and difficult. The holy grail of Aristotelian scholarship in this area is to find an

account of imagination that unifies all of this evidence. I shall not aim for that here. But a second best target is to find an account that allows us to explain together two kinds of evidence in Aristotle. The first is the evidence that suggests that imagination is a perceptual by-product, associated particularly with perceptual deviation. Malcolm Schofield's interpretation has put particular emphasis on this kind of evidence, referring to *phantasia* as 'non-paradigmatic perception',¹² or as Deborah Modrak puts it, 'sensory experience occurring under conditions not conducive to veridical perception'.¹³ The second kind of evidence shows the positive contribution imagination makes to action and intellectual thought. So Aristotle says, roughly, that animal movement is caused by a combination of *phantasia* and desire. It is *phantasia* that is responsible for presenting the object of desire or avoidance which triggers desire or avoidance in the animal and in turn motion to pursue or avoid the object.¹⁴ It seems unlikely that *phantasia* could play this role in animal motion if it was generally untruthful. If *phantasia* consistently misled us in directing our motions few of us would live to tell the story.

So what does Aristotle tell us about *phantasia*? Here is an overview of the most important points, some of which we have already come across.

- (a) *Phantasia* is a change arising *from* the activity of perception (DA 428b13, 429a1–2).
- (b) It is different in extension from perception: sometimes we have *phantasia* without perception and *vice versa*; some animals have perception but no *phantasia* (DA III.3 428a6–11), but no living being has *phantasia* without perception (428b12).
- (c) It is of those things of which there is perception (DA 428b12–13).
- (d) It is similar to perception (DA 428b14).
- (e) It is prone to error (unlike perception): 'we do not say when we are exercising our senses clearly in relation to the sense-object that this *seems* (*phainetai*) to us to be a man but rather when we are not perceiving clearly whether it is true or false' (DA 428a12–15).
- (f) It is responsible for dreams and memories (*Insomn.* 459a15–22, *Mem.* 450a21–5).
- (g) It causes motion. Animals which lack reason, and sometimes humans when our reason is occluded, act in accordance with *phantasia*, *phantasia* 'remains and is similar to perceptions' (DA 429a4–7).
- (h) It occurs in the absence of perception, but has the power of the sense-object to bring about action (MA 701b20–2). *Phantasia*, like thought, presents the forms of the objects that produce the affections (desire, aversion) leading to action (MA 700b18–21).
- (i) It is up to us, unlike belief (DA 427b17–18).

¹² Schofield (1978). ¹³ Modrak (1987) 85.

¹⁴ DA 433b27–8, 434a3–5, MA 702a15–19.

- (j) It is required for thinking: thinking does not happen without *phantasmata* (DA III.7 431a14–17).

As we have seen, the fundamental claim is (a) that *phantasia* is a change arising from the activity of perception. *Phantasia* is not the same change as perception but a secondary change consequent upon perception. This explains why only living beings that have perception can have *phantasia* but also why one need not have *phantasia* whenever one has perception. Since *phantasia* is a change further to perception it is possible for perception to occur without *phantasia*. But also since *phantasia* is caused by perception, and as we saw the content of perception was also its cause, it is reasonable to think that *phantasia* too, as a further effect of a perception with that content, will also have that content (c), or at least a content similar to that of the perception that causes it (d).

The thesis I want to advance is that *phantasia* is generally the representation of sensory contents that are not immediately given in the environment. Here I understand ‘not immediately given’ as relative to a perceiver. So the horse might be immediately given in the sense that it is right there in front of me but it may still not be immediately given to me as a perceiver, if it is shrouded in darkness or camouflaged or the perceiver is inattentive and so on. Hence (e): we say that the object merely appears to us so-and-so because we are not properly activating our senses: the sensory content is not actualized in the proper motion of perception but rather in some other motion. Compare Aristotle’s other example in the passage (428a15–16), something appears to us when we keep our eyes shut. Manifestly, we are not then exercising our senses in such a way that what appears to us is caused by a sense-object before us. Similarly, when we say that an object merely appears to us to be a man, we are expressing our doubt as to whether what appears to us is caused by the object before us or something else, as is generally the case in *phantasia*.

Moreover, such sensory contents may not be given in the same way to me as a perceiver as they are in ordinary perception, where they are received as representations of external objects. When I see a man the perceptible content is perceived as present in my environment. Sensory contents in perception are predicated of external objects. In contrast, I may in *phantasia* conjure up an appearance of a man without representing that man as present in my environment, just as those people do who use mnemonics, as Aristotle says (428a17–20). That is at least part of the reason why *phantasia*, unlike perception, is ‘up to us’ (cf. (i)).¹⁵ The contents of *phantasia* are not beholden to current perceptible reality. In dreams or memories a *phantasma* occurs to us. In remembering a cow that I have seen, I employ a *phantasma* caused by the cow when I saw it which

¹⁵ It is not clear that *phantasia* is ‘up to us’ in all cases. There are clearly cases of involuntary associations and dreams which we do not call forth deliberately. But then it is not clear that Aristotle in the context of (i), namely that of contrasting *phantasia* with belief, needs to make a universal claim about *phantasia*: clearly there are cases where we can imagine what we like without regard to reality, in a way we are never free to believe what we want given the way belief seeks to represent truth. For an attempt to deal with the problem in the context of Aquinas’ interpretation of Aristotle, see Frede (2001) 163–4.

bears a resemblance to the cow. However, Aristotle is clear that in order to remember the cow I have to use the *phantasma* as a representation of the cow and this representational use is not implied simply by having the *phantasma*. In dreams, meanwhile, I may be dreaming of a waterfall because I am exposed to the sound of a dripping tap. Here my dream image is caused by a perception of the dripping water, and there is a certain similarity between the perception and the *phantasma* (cf. point (c)). However, my dream is not *of* the dripping water: it is of the waterfall. In these cases, then, the *phantasma* is as a representation detached from its particular causal origin, whereas an *aisthêma* is a representation of its causal origin. The causal reason for this detachment is again that the *phantasma* is a *further* change in the perceiver subsequent to the perceptual *kinêsis*. This change would be expected to have at least a similar content to the perception which gave rise to it. At *DA* 428b14 (d) Aristotle says that it is necessary that the *phantasia* will be similar to the perception that gives rise to it. However, as the discussion of distortions of the *phantasmata* in dreams and memory shows, there is also room for considerable distortion in the sensory content because of the influence of the perceiver's body on the change.

Let me summarize the relevant differences between perception proper and *phantasia*. Perception only takes place in the presence of a sense-object. This is because perception requires the presence of an external object to bring it about. *Phantasia* arises from perceptual activity; however, it is a distinct motion that may also take place in the absence of any current perceptual activity. Correspondingly, the content of *phantasia* need not resemble or be taken to represent a *current* sense-object, though its content will, given its origin in a perception bear some resemblance to a sense-object. We may bring up the content of a *phantasia*, a *phantasma*, whenever we wish, without external prompting, since once the *phantasma* has been generated through perception, we can activate it ourselves, in different contexts such as dreaming, remembering or what we might call 'fantasizing'.

Phantasia and Action

As points (g) and (h) indicate, *phantasia* plays a role in the causation of action. We may understand 'action' in a narrow and in a broader sense. Action (*praxis*) in a narrow sense is confined to humans, since it presupposes choice (*prohairesis*), which is an exercise of the practical intellect (*Nic. Eth.* 1139a32–b5). However, action may also be understood in a wider sense to include the goal-directed motions of animals. Here practical intellect is not presupposed. It is clear that some actions are cases of spatial motion, though action need not be. I may generously decline your offer of repaying the debt you owe me, and by doing I shall have acted in a certain way, but I have not moved spatially. The cases I want to focus on, however, are those in which action does involve locomotion, cases such as my going to the corner shop for milk, or the lion's chasing of the ox for food. These are the cases where action falls under Aristotle's general account of locomotion in *DA* III.9–10 and *MA*.

Here in outline is Aristotle's account of the cause of locomotion. First of all, locomotion presupposes desire on the part of the animal. However, desire on its own does not move an animal: there must also be something which the animal desires, an object of desire (*to orekton*). Desire is always for the sake of something (*eneka tou*, 433a15). The object of desire moves the animal's desire which in turn moves the animal as a whole. The object of desire is the terminus or end towards which the animal's motion is directed. The object of desire is something that appears (*phainetai*) to the animal. This is where *phantasia* comes in. The object of desire moves desire by being thought about or imagined (*tôi noêthênai ê phantasthênai*, 433b12). Since only humans have thought, *phantasia* is a necessary condition of movement in other animals. For without *phantasia* there is no object of desire (433b28–9), without an object of desire there is no desire, and without desire there is no movement.¹⁶

Now if we ask why *phantasia* is required for locomotion, several answers have been suggested by scholars. Martha Nussbaum suggests that *phantasia* is required for perception of anything *as such and such*.¹⁷ Any conceptualization or interpretation of perceptual content requires *phantasia*. On her account perception on its own is simply not rich enough to provide us with the information needed to direct action. If the lion is to go hunting for an ox it needs to be able to recognize something as an ox. But perception cannot do this without *phantasia*. The problem with this is two-fold. On the one hand, there is a category of perception, accidental perception, as we saw, which does provide contents such as 'ox'. Any involvement of reason in providing such contents for accidental perception was not an obstacle to their being represented in perception as perceptibles. On the other hand, there seems no obvious reason why animals should not pursue something perceived as, say, sweet or round, that is, in terms of special or common perceptibles.¹⁸ Modrak, meanwhile, takes *phantasia* to be required in order to present the pleasantness or painfulness of the object in view of past experience so that it will be either desired or shunned.¹⁹ This has the advantage of introducing the content that is directly relevant to the triggering of desire and avoidance. What is questionable, however, is whether *phantasia* is required in order to present something as pleasant or painful. Aristotle seems to think that perception on its own can present an object as pleasant or painful. So Aristotle says at that if you have perception, then you necessarily also have a sense of pain and pleasure and therefore desire (*DA* II.3 414b4–5). It is of course possible that the reason why one will have a sense of pain and pleasure if one has perception is that if one has perception then one will also have *phantasia*. A parallel passage may be read to support this: 'if one has perception, then also imagination and desire, for where there is perception, there are also pain and pleasure, and where these

¹⁶ We should, of course, think of self-movement here, rather than the sort of movement that animal might undergo by force, cf. 432b17.

¹⁷ Nussbaum (1985) 255–60.

¹⁸ Cf. Everson (1997) 164 with Lorenz (2006) 124, n.4.

¹⁹ Modrak (1987).

are there is from necessity also appetite' (413b22–4).²⁰ However, Aristotle is not being explicit here that *phantasia* fits in as a precondition of having pain and pleasure or whether having *phantasia* follows from having pain and pleasure or perhaps from the way in which having pain and pleasure necessitates having desire. Moreover, it seems that there are some senses which present their objects as pleasant or painful without any reference to *phantasia*. So in the case of smell, at least one kind of odour is always perceived as pleasant or unpleasant by humans but even when the odour is perceived as pleasant or unpleasant *per accidens* there is no indication that memory or *phantasia* is required (*Sens.* 5, 443b17–444a3).

Nonetheless, I think Modrak is close to the truth in locating the role of *phantasia* in the presentation of what is pleasant and painful in a way that will trigger desire. What triggers desire, however, is not a memory of pleasure and pain, but a projection or anticipation of pleasure and pain. Here again *phantasia* enters as a mode of presenting perceptible contents beyond what is immediately given in perception.

Let us go back to the characterization of perception. As we saw, perception for Aristotle occurs only in the presence of a *per se* sense-object and it is limited in its representation to present sense-objects (be they *per se* or accidental). From the point of view of action, the problem with perception is that it only makes contents available in the presence of actual sense-objects. But in action we need access to perceptual information beyond what is immediately given to us in perception. *Phantasia*, by allowing for the retention and modification of perceptual information, can trigger desires for objects that are not immediately given to our senses, an obvious must if we are going to seek out objects that are good for us but are not yet available to us, and equally if we are to avoid objects which will harm us if they were to come into contact with us. *Phantasia* is, then, the mode of representing perceptual information beyond that given to us in actual perception. Since such representing lacks the direct causal link to the external object which standardly ensures the veracity of perception, *phantasia* is, if taken as a representation of current reality, prone to error. However, it is exactly the liberation from the presence of an external object that makes *phantasia* serviceable for directing us in enacting scenarios that are not actual.

To give some plausibility to this analysis, let us consider a simple example. Winnie the Pooh has a desire for sweetness, he sees honey before him, and goes ahead and eats the honey. This looks like the sort of practical syllogism Aristotle has in mind in *MA* 7. We might say here that the current perception of the honey is sufficient to trigger the pursuit of the honey, given the desire for sweetness. Where does *phantasia* enter? Nussbaum would say already in seeing the honey as honey, Modrak in seeing it as

²⁰ εἰ δ' αἰσθῆσιν, καὶ φαντασίαν καὶ ὀρεξίν· ὅπου μὲν γὰρ αἰσθησίς, καὶ λύπη τε καὶ ἡδονή, ὅπου δὲ ταῦτα, ἔξ ἀνάγκης καὶ ἐπιθυμία. It is possible, by the simple device of putting the comma after *φαντασίαν* rather than *αἰσθῆσιν* to read Aristotle to be saying that one has desire if one has both perception and *phantasia*. However the explicating line is naturally read as repeating two inferential steps from perception to pain and pleasure and from pain/pleasure to desire. Hence we naturally associate *phantasia* with the first inference, i.e. with the inference to having pain and pleasure.

sweet, which only works if Pooh has a memory, hence *phantasma*, of honey as sweet. On my reading, however, *phantasia* enters because Pooh has in mind a *phantasma* of honey as sweet that exceeds what is currently given in perception proper. His desire is directed towards an *expected* object of perception. Take another example: Pooh is eating honey surrounded by yoghurt which he does not like. He eats from the inside of the plate out and stops before he reaches the dreaded yoghurt. Why does he stop? Not because the honey no longer tastes sweet but because he anticipates the nasty taste of yoghurt. The example illustrates that what motivates Pooh is not the current perception of the honey as sweet but the expected perception of sweetness. *Phantasia* here appears as a mode of sensory projection: it is an anticipated sensory experience which serves to trigger desire. Elsewhere (*Mem.* 449b27) Aristotle refers to the role of *phantasia* in hope (*elpis*), the anticipation of a future good based on a *phantasma*. Aristotle sees hope as a sort of future-related analogue to memory: where memory involves the use of a *phantasma* as a representation of the past, hope projects a *phantasma* as a representation of the future. Both contrast with perception which is only of the present and requires the presence of a *per se* perceptible object. Hope may involve a specific attitude not generally implied by desires for the future, but it shares this much with desire, the occurrence of a *phantasma* as a representation of a future state.

It is clear that this account requires qualification in light of Aristotle's repeated declaration that *perception*, as well as imagination and thought, may cause desire.²¹ It is helpful to relate this point to the difference between animals insofar as they move and insofar as they do not.²² Consider two kinds of animal: one which does not move, a sea anemone,²³ and another which does, a frog. The sea anemone will be able to select food as it touches it. It is quite plausible to say that as the sea anemone touches the food it will select it on the basis of its pleasant taste or feel. As it tastes the food as pleasant it will desire it and consume it. The pleasantness of the food which motivates its selection is given in current perception. There is therefore no need for *phantasia* to present the food as pleasant.²⁴ In contrast, the animal that moves will choose the food on the basis of its promised pleasures: the frog will need already to represent the fly as pleasant in order to have the desire to move towards it, but this experience of the fly as pleasant is not one that is given to it in current perception.²⁵ Of course, it is true that the frog will see, hear, or smell flies in advance of eating them. The distance senses, as Aristotle tells us, have exactly the function of informing us in advance of the dangers or opportunities in the environment. However, what we see, smell, or hear as such are not the attributes

²¹ *MA* 700b19, 701a35, b16.

²² See the excellent discussion in Lorenz (2006) 138–47.

²³ The example and the basic point are from Irwin (1990) 587, n.2.

²⁴ Cf. Lorenz (2006) 141: 'behaviour of the kind reportedly manifested by sponges could, it seems reasonable to think, be explained just in terms of perception and what we might call pro-attitudes or contra-attitudes to items that the animal apprehends in acts of perception—for instance, occurrent states or processes'.

²⁵ Though it may be extrapolated from current perception; see my footnote below.

that motivate us: that would be the pleasure of consuming the food or drink, which is not represented by the current perception of the object.

Understood in this way, *phantasia* is needed neither to generate desire as such, nor to motivate selection or avoidance of objects, but to motivate selection or avoidance of objects whose desirable attributes are not given in current perception. This would explain why Aristotle thinks that perception in some cases of direct contact, as in the example of the sea anemone, is sufficient to trigger desire in animals, but in others not. It is selection and avoidance enacted through locomotion that requires *phantasia*.

However, this claim too might seem to be undermined by Aristotle's account in *MA* 7 of animal locomotion. Here he says that:

In this way living creatures are impelled to move and to act, and desire is the last cause of movement, and desire arises through perception or through imagination and thought. (701a34–6, revised Oxford transl. by Farquharson)²⁶

If one takes Aristotle to be talking exclusively here about locomotion—the movement of the whole body from one place to another—then it would seem that perception can take the place of *phantasia* also in this instance.²⁷ However, Aristotle's account of locomotion in the *MA* is based on a more basic account of spatial self-motion which seems also to apply to cases where the animal moves part of its body but not necessarily the whole of the body.²⁸ Aristotle opens the *MA* by saying,

Elsewhere we have investigated the movement of animals after various kinds, the difference between them, and the causes of their particular characters (for some animal fly, some swim, some walk, others move in various other ways); there remains an investigation of the common cause of *any sort of* animal movement *whatsoever*. (698a1–7, revised Oxford transl. Farquharson, my emphases)²⁹

²⁶ οὕτως μὲν οὖν ἐπὶ τὸ κινεῖσθαι καὶ πράττειν τὰ ζῷα ὁρμῶσι, τῆς μὲν ἐσχάτης αἰτίας τοῦ κινεῖσθαι ὁρέξεως οὐσης, ταύτης δὲ γνωμένης ἢ δι' αἰσθήσεως ἢ διὰ φαντασίας καὶ νοήσεως.

²⁷ This seems to be the view of Lorenz (2006) 141, n.13, though it is unclear to me how he maintains its consistency with the view that only *phantasia* will do in generating locomotion.

²⁸ Lorenz (2006) denies this, citing *Phys.* 254b7–12 which suggests to him that motion of a part of the body is only spatial motion *per accidens*: τῶν δὲ κινούντων καὶ κινουμένων τὰ μὲν κατὰ συμβεβηκὸς κινεῖ καὶ κινεῖται, τὰ δὲ καθ' αὐτά, κατὰ συμβεβηκὸς μὲν ὅλον ὅσα τε τῷ ὑπάρχειν τοῖς κινούσιν ἢ κινουμένοις καὶ τὰ κατὰ μόριον, τὰ δὲ καθ' αὐτά, ὅσα μὴ τῷ ὑπάρχειν τῷ κινούντι ἢ τῷ κινουμένῳ, μηδὲ τῷ μόριόν τι αὐτῶν κινεῖν ἢ κινεῖσθαι. In the first case, we say that something moves accidentally because it is attached to something that moves. The soul moving because the body moves seems a case in point. In the second case, the point seems to be that *the whole* may be said to move accidentally insofar as a part of it moves or is moved: so in A. Kenny's example (Kenny (1969) 13–14), the pianist moves because his hands move. But the point here seems to be not that the pianist does not move spatially, he after all moves his hands, but that he moves *as a whole* only accidentally in that it is his hands that move *per se*, or as one might also say, the pianist moves his hands *per se*, while in moving his hands *per se* he also moves himself as a whole accidentally. So read, the passage does not support Lorenz' claim that spatial movement of a part is only spatial movement *per accidens*. It would be odd, after all, if Aristotle thought that all movement of a part was *per accidens*, since his view is that natural substances move themselves by one part moving another.

²⁹ Περὶ δὲ κινήσεως τῆς τῶν ζώων, ὅσα μὲν αὐτῶν περὶ ἑκάστον ὑπάρχει γένος, καὶ τίνες διαφοραί, καὶ τίνες αἰτίαι τῶν καθ' ἑκάστον συμβεβηκότων αὐτοῖς, ἐπέσκεπται περὶ πάντων ἐν ἑτέροις· ὅλως δὲ περὶ τῆς

His answer goes back to the account in *Phys.* VIII of self-motion, the account of how one part within the animal sets up motion in another part.³⁰ This is an account that applies in the first instance to the internal parts of the animal. In some cases, such motion translates into the spatial movement of the entire animal, but it seems that the account in its basics is equally suited to explaining the motion of body parts, even where the animal as a whole does not end up moving place. The case where desire results in the moving of one's legs with the result that one's body moves as a whole does not seem to be of a fundamentally different sort from the case where desire results in the moving of one's arms to take a drink, in the example of *MA* 7 (701a32–3). It seems possible, then, to include the spatial motion of parts rather than the whole of the body as a kind of spatial self-motion. But if so, it seems in principle possible to explain Aristotle's inclusion of perception in the discussion as relevant to those cases, like the sea anemone, where a stationary animal moves itself to avoid or pursue an object because it is currently perceiving it as pleasant or painful. And so there is no contradiction between those inclusions of perception in the account of spatial motion and the claim that *phantasia* is necessary, in the manner suggested, for the spatial motion of the entire animal.³¹

In the case of human action we can see a role for *phantasia* parallel to its function in animal locomotion. In the case of human action, what is desirable is the doable (*to prakton*), where the doable is what could be otherwise. Elsewhere (*Nic.Eth.* III.3), Aristotle makes it clear that we only deliberate concerning what could be otherwise, which, in this context, excludes the past and the present. Human action, then, is always orientated towards the future. Aristotle is clear that when *nous* instructs desire it identifies or seeks to identify what is truly good. With a nod to Plato (*Protagoras* 356a–357e), Aristotle says (*DA* 434a7–11) that reasoning brings together *phantasmata* of the various outcomes and measures which one is the greatest. Where we pursue the apparent good on the basis of appetite (*epithumia*), rather than reason (*logos*), the desirable is identified on the basis of what appears pleasant now. Aristotle says that what is pleasant now appears also pleasant and good *simpliciter* (*DA* 433b8–10) because appetite does not 'see' (*horan*) the future. Here what is desirable is clearly identified on the basis of what appears pleasant now, but the form in which the appearance informs desire is as an appearance of what is pleasant and good *simpliciter*. The *phantasia* thus seems to have a generalizing intent that goes beyond what may be given in perception

κωῆς αἰτίας τοῦ κινεῖσθαι κίνησιν ὁποιοῦν (τὰ μὲν γὰρ πτήσει κινεῖται τὰ δὲ νεύσει τὰ δὲ πορεύει τῶν ζώων, τὰ δὲ κατ' ἄλλους τρόπους τοιούτους) ἐπισκεπτέον νῦν.

³⁰ Contrast Lorenz (2006).

³¹ *DA* III.3 428a9–11 appears to say that *phantasia* does not belong to the ant, the bee, or the worm. Both the ant and the bee would seem to be clear counter examples to the claim that locomotion requires *phantasia*. However, the text is corrupt and seems contradicted by Aristotle's ascription of memory to bees elsewhere. Reading μέν ἢ μελίττη, σκώληκι δ' οὐδ' as understood also by Alexander would alleviate the problem, given the highly qualified ascription of *phantasia* to creatures, such as worms, which move indefinitely (434a5). Still, Aristotle would have done better, on my reading, using a stationary animal as his example. I am grateful to Klaus Corcilius for raising the issue.

here and now. Put differently, even if I perceive the sweet honey now as pleasant, the appearance that instructs my desire to want to eat some (more) is the appearance of the honey as pleasant and good *simpliciter*. *Phantasia* again goes beyond what is immediately given in perception.

The role of *phantasia* in action and locomotion then is this. *Phantasia* arises as a movement from actual perception: its content is therefore similar to that of actual perception, though the fact that it is a distinct movement also allows for variation in the content. Most importantly, however, the perceptual content of a *phantasia* need not occur as a representation of the sense-object that gave rise to the actual perception or to any current sense-object. *Phantasia* is therefore useful as a mode of presentation of perceptible contents that goes beyond what is given in immediate perception. *Phantasia* serves to project available perceptual information onto a—at least as yet—not perceived future state of affairs. It thereby triggers a desire to bring that state of affairs about. *Phantasia* is here the representation of perceptual information in the mode of the possible, in the mode of what is doable.

Aristotle's account is developing points made by Plato. In the *Philebus* (40a–b) Socrates introduces the notion of *phantasmata* as picture-like accompaniments of judgements.³² Socrates is here interested in the pleasures that we take in conjuring up *phantasmata* of future states of affairs, like imagining that you are going to be rich. Socrates makes it clear that you can have such *phantasmata* about past, present, and future, and with this Aristotle would agree. However, the particular interest in the context is the relationship between desire and the *phantasmata* of the future. Aristotle does not see *phantasmata* as dependent on judgement or belief (*doxa*)—his example of the sun appearing to be a foot across while you judge it to be much bigger is a case to show, *pace* Plato, how the two come apart. However, he does see *phantasia* as responsible for presenting pleasant appearances of future state of affairs which trigger desire.

Phantasia, as we have seen, is a mode of sensory representation that operates in relation to locomotion. *Phantasia* is required in order to cause locomotion because, I have argued, it projects perceptible content as an object of desire. Perception as such is limited to representing the present, but what motivates us to move is a representation of a future good. *Phantasia* is projection of desirable perceptual features based on past or present perceptual information.³³

³² The relevance of this passage to Aristotle's account of *phantasia* was noted already by Hackforth (1945) 72.

³³ The account I have given is generally in agreement with Lorenz (2006). However, I am more sceptical than Lorenz about the necessary role of memory in generating *phantasmata* about the future. Lorenz (134) argues 'On the basis of *Posterior Analytics* 2.19, then, we may assume that, on Aristotle's view, animals that have the capacity for retaining sensory impressions can apprehend appropriate items that they cannot currently see, hear, or otherwise perceive, provided that they retain suitable sensory impressions. We can now add a second point, namely that the capacity for *phantasia* in fact involves the capacity for retaining sensory impressions. These two views, taken together, suggest a cognitive role for *phantasia*. Animals that are capable of *phantasia* have cognition apart from perceiving: they can apprehend appropriate items that they do not currently perceive by way of their senses, provided that they retain suitable sensory impressions.' Current perceptual experiences may generate concurrent *phantasmata* (cf. 428b25–30). Imagine the first time you eat

Phantasia may be viewed as an affection of the perceptual faculty that it has by virtue of the perceptual faculty's *integration* in a soul with locomotion. We should think of this integration in hierarchical and teleological terms: the higher faculty is locomotion which perception serves, as we saw in our first text from *Sens*. What did not appear from this passage, which we had to learn from Aristotle's account of the causes of locomotion in *DA* III.10–11, is that locomotion requires affections of the perceptual faculty, *phantasmata*, that go beyond the affections that define the perceptual faculty as such. *Phantasia* is thus an activity of the perceptual faculty, which while it goes beyond the activities that strictly define the perceptual faculty, is necessary for the animal that has locomotion.

Corroboration of this claim comes in Aristotle's discussion of *phantasia* in the so-called 'imperfect' animals in *DA* III.11:

We must consider also what it is that produces movement in the imperfect animals which have perception by touch only – whether they can have imagination and wants, or not. For they evidently have pain and pleasure, and if these they must have wants also. But how could they have imagination? Or is it that just as they are moved indefinitely, so also they have these things [sc. desire and *phantasia*] but indefinitely? (433b31–434a5)

Generally, Aristotle thinks that distance senses are required for animals that move around, so that they can spot dangers before they bump into them and avoid running past nourishment they need in order to survive. Aristotle however admits that there are certain animals which move even though they only have touch, that is no distance senses. We may think for example of certain worms or grubs which have no obvious organs of sight, hearing, or smell. These imperfect animals are (as Simplicius rightly points out) not maimed animals. They have the organs required to bring about their natural ends, it is just that those ends are very modest compared to those of higher living beings. The right perspective on the imperfect animals is, then, to say that since their motion is imperfect (by their nature) they only have the instruments to allow them to move imperfectly. This means, in particular, that they have no distance senses, only touch as we are told. They move indefinitely and so do not require distance senses

taramosalata: you may while, and by virtue of, having your first mouthful present the image to yourself of another pleasant mouthful, and reach for another spoonfull. No doubt future appetitive encounters with taramosalata will be informed by this experience, but retained *phantasmata* do not seem to be necessary for all cases of forming a desire of the sort leading to locomotion. It seems that one can project desire-generating *phantasmata* on the basis of current perception without the mediation of memory. It is also worth noting that if memory is a requirement for locomotion-causing *phantasia*, then Aristotle's claim that there are animals that do not have memory will apply only to stationary animals. While Aristotle never gives particular examples when talking of animals without memory, there are passages where one naturally thinks of locomotive animals. So in *HA* VIII.1 589a1–3 Aristotle says that animals with memory tend to stay longer with their offspring, while those without memory leave their young having reared them. Earlier in *HA* VI.6 563b9–11 Aristotle had mentioned that many birds leave their young in this way, so it is natural at 589a2 to think that his point applies to some birds. We may object that even such birds clearly have recognition skills, but it is not obvious that such skills need be based in what Aristotle takes to be memory (which requires, amongst other factors, perception of time, *Mem.* 449b28–30).

to direct their motions towards definite targets. But the fact that their natural motion is indefinite is also reflected in the manner in which they have *phantasia* and desire. The way to read this, I suggest, is that their *phantasia* does not present them with a definite object of desire and so their desire is not directed at a definite target. They have only the sort of hazy desires corresponding to the sort of hazy *phantasiai*. We may prefer to think of such hazy desires and *phantasiai* as no desires or *phantasiai* at all: surely a desire is defined by its object, so if there is no real object, then there is no real desire. But Aristotle feels the pressure of accommodating the claim that there is no locomotion at all without *phantasia*, so the claim that an indefinite motion is caused by an indefinite desire fits his purposes.

The wider lesson to be drawn from the example of the imperfect animals is this. *Phantasia* acts to set the target. Perception works as the means to deliver this target. Both are teleologically subordinate to locomotion. So if the locomotion is indefinite the *phantasia* is indefinite and the perceptual means are similarly limited. Nature does not waste her efforts on equipping grubs with eyes and ears when they are incapable anyway of directing their motions to or away from objects. *Mutatis mutandis* we should adopt the same causal hierarchy for perfect animals: because we have locomotion we have *phantasia* to represent the target of locomotion, and because we have locomotion we have the perceptual instruments to pursue this target to our satisfaction.

Phantasia and Thought

The discussion has focused on the role of *phantasia* in locomotion. However, I want to end by offering some outline remarks on the role of *phantasia* in rational thought since this role gives us reason for thinking that Aristotle has a more general consistent notion in mind throughout his different uses of *phantasia*.

In *APo* II.19 we find Aristotle tracing a development of our understanding of fundamental concepts rising from perception, through memory, experience, and rational thought (*nous*). The process is clearly supposed to explain in some sense how we come to grasp the fundamental concepts that can be expressed in scientific demonstrations. Since the process depends on memory, we are entitled to see the process as involving *phantasia*. Because *phantasia*, unlike perception, does not rely on the presence of a perceptible object, *phantasia* allows us to accumulate perceptual information serviceable for comparison and generalization of the sort that Aristotle thinks leads to the articulation of the most fundamental concepts.

DA III.8 adds important information on the relationship between *phantasia* and rational thought. Aristotle says there (as we saw cf. (j) on list) that whenever we contemplate we do so together with a *phantasma*. What Aristotle seems to have in mind is the sort of example he gives in *Mem.*1 (449b30–450a13), a passage I shall return to in the next chapter: when you think about triangle you cannot help but at the same time have an appearance of a triangle in mind, similarly to the way in which you may talk about the properties of triangle in general on the basis of a particular triangle drawn

before you on a blackboard. Aristotle then says that ‘*phantasmata* are like *aisthēmata* (sense-objects as perceived) except without matter’. The contrast is not obvious since Aristotle would also say that in perception we perceive only the sensible form and not the matter of the object (*DA* II.12), a point which Aristotle has just reminded us of in *DA* III.8 (432a2–3). But one way we can make sense of the contrast is to return to what in this chapter has been the fundamental contrast between perception and *phantasia*: the point that *phantasia*, while having perceptible content, is not tied to the presence of perceptible object. While we may have an image of a particular square of a determinate size, we need not have an image of a square possessing all the attributes of squares occurring in our perceptible environment, such as tables, CD boxes, picture frames, and so on. Like a mathematician’s drawing, *phantasia* represents a particular perceptible object but allows for a degree of abstraction from the wealth of perceptual information attached to the perception of external objects. *Phantasia*, in this sense, presents perceptible content abstracted from the concrete particulars in a way that allows the intellect to home in on the proper object of thought. This claim does not exclude the fact that the content of *phantasia* may appear as particular, as implied by *Nic. Eth.* 1147b5. For the thought is that the *phantasia* of a triangle, say, is abstracted from any particular external triangles we may have experienced, not that it does not appear to us as a particular triangle. It is again, then, the way *phantasia* allows for the presentation of perceptible content in the absence of any concrete sense-object which for Aristotle (a) provides the contrast with perception proper, and (b) makes *phantasia* useful for the further ends that perception serves, in this case thought.

When Aristotle said in the *Sens.* that perception contributed to the well-being of those animals that have knowledge by showing them many differences from which knowledge of intelligibles arises, we may take it that *phantasia* plays a crucial role in registering those differences. There is thus a common thread in Aristotle’s treatment of *phantasia* in locomotion and thought: the ability to represent perceptual contents beyond those caused by, and by virtue of, a present sense-object. On the one hand, this reading allows for the contrast between the general veracity of perception and the doubtful truth value of *phantasia* as a representation of current perceptible reality. On the other hand, however, by allowing us to handle perceptible contents beyond the immediately given, by giving us perceptual information offline, as it were, *phantasia* provides the important bridge to the projection and generalization of perceptual information required for perception to contribute to action and thought, and so to the well-being of those animals equipped with those capacities.

Conclusion

The point of this chapter has been to show how *phantasia* depends on the perceptual capacity. The perceptual capacity works as an efficient, formal, and final cause of *phantasia*. As an efficient cause insofar as active perception brings about the *kinêsis* of *phantasia*, as a formal cause in that perception provides the contents of *phantasia*, and as a

final cause in that *phantasia* helps make perceptual capacity useful in locomotion and thought for the relevant living beings as beneficiaries.

We may still want to think of *phantasia* as a kind of capacity. This should present no problem as long as it is clear that *phantasia* does not enjoy the status of a *dunamis* in its proper Aristotelian use: *phantasia* is not a principle of change, and specifically it is not a natural principle of change, in the sense of a formal, final, or efficient cause. *Phantasia* is better seen as one of the affections we undergo by virtue of the perceptual capacity. Indeed, we may see the account of *phantasia* as a prime instance of the explanatory primacy of capacities in Aristotle's psychology, whereby a capacity works as an explanatory principle in relation to other behaviours that we as living beings display as ensouled.

The account of *phantasia* has brought up another issue of general significance. The difference between the two notions of a final cause suggested two teleological perspectives on the capacities. One was that of the proper final cause, the end of the capacity, which coincided with the formal cause, another that of the beneficiary which introduced further teleological relations between a capacity and others. So in accounting for *phantasia*, we needed to understand the way in which the perceptual capacity contributed to the realization of other capacities for a certain kind of living being. While the perspective of the end allows for a modular approach, the perspective of the beneficiary thus seems to require a holistic approach. We can only understand the way in which perception contributes to the good of the beneficiary by relating it to the fact that the beneficiary is a being with either locomotion, or action, or intellect, or a combination of these. The holistic approach, which comes to the fore in the last two chapters of the *DA*, foreshadows the approach to the capacities in the biological works, where, as I shall argue in the last chapter of this book, the capacities will be put to work jointly in the context of explaining and defining the differences between the various kinds of living beings.

The Intellect and the Limits of Naturalism

One of the grounds Aristotle gave (413a23) for saying that something is alive and has soul is that it ‘thinks’ (*noein*). Thinking takes a range of forms, inferring (*sullogismos*), calculating or reasoning (*logismos*, *dianoia*), deliberating (*bouleusis*), forming opinions (*doxa*)¹ and suppositions (*hupolépseis*), a kind of imagination (*phantasia*, *DA* 433a10, b29) thinking of eternal truths (*theôria*), and more. Aristotle takes these different activities as manifestations of *nous*, ‘the intellect’. So, for example, he begins his discussion of *nous* in *DA* III.4 by referring to the part of the soul by which it knows (*ginôskei*) and understands (*phroneî*), before clarifying that by *nous* he means ‘that by which the soul reasons and supposes (*dianoeitai kai hupolambanei*)’ (429a23–4).

It is clear, then, that there is a variety of cognitive activities that Aristotle takes to fall under *nous*. One might, therefore, ask what, if anything, is the unifying aspect which justifies calling them all *nous*? Moreover, is there a way of distinguishing *nous* from the other cognitive capacity we have come across, perception? We should bear in mind that Aristotle charges some of his predecessors with not properly distinguishing the two.² The following passage gives clues to both kinds of question:

Since we can distinguish between a spatial magnitude and what it is to be such, and between water and what it is to be water, and so in many other cases (though not in all; for in certain cases the thing and its form are identical), flesh and what it is to be flesh are discriminated either by different faculties, or by the same faculty in two different states: for flesh necessarily involves matter and is like what is snub-nosed, a this in a this. Now it is by means of the sensitive faculty that we discriminate the hot and the cold, i.e. the factors which combined in a certain ratio constitute flesh: the essential character of flesh is apprehended by something different either wholly separate from the sensitive faculty or related to it as a bent line to the same line when it has been straightened out. Again in the case of abstract objects what is straight is analogous to what is snub-nosed; for it necessarily implies a continuum as its matter: its constitutive essence is different, if we may distinguish between straightness and what is straight: let us take it to be two-ness. It must be apprehended, therefore, by a different power or by the same power in a

¹ Aristotle also mentions true *doxa* as an example of true thinking (*noein*) at 427b9–10.

² A particular problem for those who composed the soul out of the four elements and made both perception and knowledge happen by the action of like element on like, cf. *DA* I.5 409b26–410b15. See also *Metaph.* *Γ*.5 1009b13–39 on predecessors who take perception to be knowledge.

different state. To sum up, in so far as the realities it knows are capable of being separated from their matter, so it is also with the powers of *nous*. (DA III.4 429b10–22, after Smith revised Oxford transl.)

The upshot of the passage is that *nous* is distinguished from perception by dealing with the *logos*. This analysis of *nous* applies, most properly, to thinking about essences. However, one might think that there are ways in which other kinds of thinking, including those surveyed at the beginning of this chapter, could also be characterized as dealing with *logoi*.³ So in calculating we are thinking about relationships between numbers, again a form of *logos*, in making inferences we are thinking about the way in which propositions provide reasons for each other, in forming a belief we are responding to persuasive argument,⁴ in deliberating we are sensitive to the way there is best reason to act, and measuring up the better of several options (434a7–10). One might think of *nous* then in general terms as the capacity by which we are responsive to *logos*, in its various manifestations.⁵ This point would help explain why Aristotle refers to *nous* also as *logos* or as the part having *logos*.⁶

One might object that *nous* is sometimes used in contrast with *logos*, particularly when *nous* is concerned with definitions or principles. So at *Nic. Eth.* 1142a25–6 Aristotle says that there is *nous* of definitions (*horoi*) of which there is no *logos*.⁷ However, here *logos* is used in a specific sense of proof or demonstration (*apodeixis*) to contrast with *nous* of definitions.⁸ But it is clear from several places in the *Metaph.* that this is not a general contrast since *horoi* themselves are kinds of *logoi*, namely, *logoi* of the essence.⁹ Indeed, we have already seen Aristotle use this conception of *logos* in DA III.4 when he exemplified the intelligible by the *logos* of flesh, the essence of flesh. The claim then is that *nous* in its different forms is responsive to different kinds of *logos*.

It is important to have a general conception of the intelligible since it is clear that Aristotle wants to characterize a variety of intellectual activities in DA III.4–8 and not just theoretical ones. As I noted earlier, Aristotle also begins his discussion by clarifying that by *nous* he means that by which we reason and have suppositions, so here he is not

³ Polansky (2007) 437 remarks: ‘what can be known, what can be opined truly or falsely, and what can be at all put into *logos* are matters for thought. This seems sufficiently expansive to encompass all things’.

⁴ Aristotle presents *pistis* as a form of argument in *Rhet.* 1355a4–18.

⁵ Cf. *EE* 1248a 33, which suggests that *nous* is part of or an aspect of *logos*.

⁶ See, e.g., *Pol.* VIII.14 1333a25, *Nic. Eth.* VI.1 1139a4, with Bonitz (1870) 436, s.v. III.

⁷ τὸ γὰρ πρακτὸν τοιοῦτον. ἀντίκειται μὲν δὴ τῷ νῷ· ὁ μὲν γὰρ νοῦς τῶν ὄρων, ὧν οὐκ ἔστι λόγος.

⁸ As at *APo* II.19 100b10.

⁹ *Metaph.* 1017b22: (ἀναρουμένον τε γὰρ οὐδὲν εἶναι, καὶ ὀρίζειν πάντα)· ἔτι τὸ τί ἦν εἶναι, οὐδ’ ὁ λόγος ὁρισμός, καὶ τοῦτο οὐσία λέγεται ἐκάστων. Compare also the claim at *Metaph.* 1030a6–7 that there is an essence only of those things whose *logos* is a definition (*horismos*, cf. *horoi*, a8). In *Metaph.* A 1075a1–4 what is being thought of in theoretical science, the essence, is the *logos* and is the same as the act of *noēsis*: ἡ ἐπ’ ἐνίων ἡ ἐπιστήμη τὸ πρᾶγμα, ἐπὶ μὲν τῶν ποιητικῶν ἀνευ ὕλης ἡ οὐσία καὶ τὸ τί ἦν εἶναι, ἐπὶ δὲ τῶν θεωρητικῶν ὁ λόγος τὸ πρᾶγμα καὶ ἡ νόησις; οὐχ ἑτέρου οὖν ὄντος τοῦ νοουμένου καὶ τοῦ νοῦ, ὅσα μὴ ὕλην ἔχει, τὸ αὐτὸ ἔσται, καὶ ἡ νόησις τῷ νοουμένῳ μία.

particularly thinking of theoretical *nous*. And as we read on in III.6–8 it is clear that the account of thinking is not restricted to essences. In III.6 he contrasts the *nous* that is of essence, which does not say ‘something of something’, with the sort of *nous* that concerns predications (430a27–30). He compares the difference between the two sorts of thinking to that between special perception of simple qualities and accidental perception, say, seeing that this white thing is a man. In III.7 Aristotle refers to the role of the ‘reasoning soul’ (*dianoêtikê psukhê*) in determining the practical good: ‘when it asserts or denies good or bad, it avoids or pursues it. That is why the soul never thinks (*noei*) without an image’ (431a15–17), a point that he repeats when referring to the *noêtikon* (431b2). Aristotle draws the comparison here between the practical good and bad, on the one hand, and the true and the false on the other saying that they are in the same genus (431b8–12). The intelligible objects falling under the scope of *nous* are wider, then, than those contemplated by theoretical intellect.

This conclusion brings us up against the question of how to translate *nous* and *noein*. It has been urged by Myles Burnyeat that *nous* should be translated by ‘intellect’, and not ‘thought’ and *noein* as ‘to understand’, not ‘to think’. *Dianoiesthai*, not *noein*, he argues,¹⁰ is Aristotle’s word for everyday thinking. This is because *nous* implies *epistêmê*, knowledge in the sense properly articulated in the *APo*.¹¹ But, as we have seen, while this is sometimes the case, it is not always so. It would be misleading to translate *noein* by ‘to understand’ in those contexts where Aristotle allows for false *noein* (427b9), or presents *doxa* as a kind of *nous*,¹² or takes supposition as a function of *nous* (429a23), where we know that supposition can be both true and false (427b16–21).¹³ There is the further awkward point that ‘understanding’ tends in English to indicate a state rather than the episodes of actual thinking, which Aristotle takes to be the highest manifestation of *nous*. Hence for want of better one may want to retain, with reservations, the translation of *noein* as ‘to think’.

However, one might seek to accommodate Burnyeat’s position to some extent. One point would be to say that while *nous* in its various forms has *logos* in its various forms as its object, what it most properly responds to and reproduces is true or correct

¹⁰ On the basis, *i.a.*, of *DA* I.3 415a7–12; I.4 408b11–29.

¹¹ Burnyeat (2008) 27.

¹² Note also 427b27: *περὶ δὲ τοῦ νοεῖν, ἐπεὶ ἕτερον τοῦ αἰσθάνεσθαι, τούτου δὲ τὸ μὲν φαντασία δοκεῖ εἶναι τὸ δὲ ὑπόληψις, περὶ φαντασίας διορίσαντας οὕτω περὶ θατέρου λεκτέον*. For this to be a justification of Aristotle’s procedure, *to noein* has to be translated in a way that allows it to be at least not implausible that it could be *phantasia* or supposition.

¹³ Burnyeat (2008) 35 takes the reference at 429a23 to be only to first potentiality *nous*. The puzzling implication seems to be that episodes of ordinary thinking are either not manifestations of *nous* in actuality or that they are not manifestations of *nous* in actuality. In *DA* II.5 the three stages of knowing grammar seemed to imply that it was the same knowledge that was developed at various levels of potentiality and actuality. In contrast, the objects of theoretical wisdom could only be a subset of those of ordinary thinking since there is clearly a range of objects, falsehoods, contingent, or practical truths, that are the objects of ordinary thinking but not theoretical understanding. Of course one can make mistakes or focus on aspects that are not essential when learning grammar but thinking in these ways hardly qualify as ways in which one, at any level, potentially *knows grammar*.

(*orthos*) *logos*.¹⁴ This clearly applies to the theoretical and practical *nous*, but it is also true, one might reasonably say, of both belief and persuasion.¹⁵ If so, *nous* works properly in grasping true *logos*. Second, since *nous* is concerned with *logos* and *logos* in its most proper sense is a definition or statement of essence, that which is most *noëton*,¹⁶ we can see how the highest expression of *nous* is also the grasping of essence, that is, understanding in its highest form. In those cases where *noein* gets it wrong or is expressed in mere *doxa* or persuasion, we might think of this as a kind of *nous* not fulfilling its proper end. If we think of *nous* in terms of its final cause, ‘understanding’ would seem a proper conceptualization of what *nous* really is, though it may still fail as a translation of all occurrences of *nous*. Such a view might seek to counter the objection that there is a distinct practical *nous*, by saying that just as theoretical *nous* is fulfilled in thinking about true definitions, so practical *nous* is fulfilled in deliberating truly about the best course of action. While such exercises of *nous* remain inferior to those of theoretical *nous*, one might still talk of *practical* understanding or wisdom.¹⁷ *Nous*, then, would be a capacity, or group of related capacities, for discerning true *logos*, which is most fully, but not exclusively, manifested in theoretical understanding.

There are, indeed, different conclusions that one might draw from the variety of intellectual activities associated with *nous* concerning the status of *nous* as a capacity. One possibility is that Aristotle thinks of all the intellectual activities as activities of one basic if complex capacity. In that case, one might present the relationship between the various kinds of thinking and the capacity of *nous* as like that between the various kinds of perceptual activities and the perceptual faculty understood as the five senses and their dependent functions. We have already seen Aristotle compare the relationship between thinking of essences and thinking about predicative propositions as being like the relationship between special and accidental perception. So, on this suggestion, we would have a general intellectual capacity with a general object, perhaps *logos*, differentiated according to various specific kinds of object.

Another picture emerges, however, from *Nic. Eth.* VI. Here Aristotle seems to distinguish the theoretical and practical *nous* into parts with distinct domains.

Earlier it was said that there are two parts of the soul, the one that has reason (*logos*) and the irrational. But now we should distinguish in the same way about the rational. Let it be assumed

¹⁴ Cf. *Nic. Eth.* VI.1113b32–4: διὸ δεῖ καὶ περὶ τὰς τῆς ψυχῆς ἔξεις μὴ μόνον ἀληθῶς εἶναι τοῦτ' εἰρημένον, ἀλλὰ καὶ διωρισμένον τίς ἐστιν ὁ ὀρθὸς λόγος καὶ τούτου τίς ὁρος; 1139b12–14: ἀμφοτέρων δὲ τῶν νοητικῶν μορίων ἀλήθεια τὸ ἔργον. καθ' ὅς οὖν μάλιστα ἔξεις ἀληθεύσει ἐκάτερον, αὐτὰ ἀρετὰι ἀμφοῖν.

¹⁵ Cf. *Rhet.* I.1 1355a19–18: δῆλον ὅτι ὁ μάλιστα τοῦτο δυνάμενος θεωρεῖν, ἐκ τίνων καὶ πῶς γίνεται συλλογισμός, οὗτος καὶ ἐνθυμηματικός ἀν εἴη μάλιστα, προσλαβὼν περὶ ποῖα τέ ἐστι τὸ ἐνθύμημα καὶ τίνας ἔχει διαφορὰς πρὸς τοὺς λογικοὺς συλλογισμούς. τό τε γὰρ ἀληθές καὶ τὸ ὅμοιον τῷ ἀληθεῖ τῆς αὐτῆς ἐστὶ δυνάμειος ἰδεῖν, ἅμα δὲ καὶ οἱ ἄνθρωποι πρὸς τὸ ἀληθές πεφύκασιν ἰκανῶς καὶ τὰ πλείω τυγχάνουσι τῆς ἀληθείας· διὸ πρὸς τὰ ἐνδοξα στοχαστικῶς ἔχων τοῦ ὁμοίως ἔχοντος καὶ πρὸς τὴν ἀληθειάν ἐστιν. (My underlining.)

¹⁶ Cf. *DA* III.4 429b3.

¹⁷ See, however, Frede (2004) 14, who argues Aristotle viewed practical knowledge in relation to theoretical knowledge as a sort of wisdom manqué.

that the parts having reason are two, one by which we contemplate beings whose principles cannot be different, and one by which we contemplate those that can be different. For in relation to each of the objects that differ in kind there is naturally also a part of the soul that differs in kind,¹⁸ since it is in virtue of a certain likeness and kinship with their objects that their knowledge belongs to them. Let one of these parts be the scientific and the other the calculative; for deliberating and calculating are the same thing, and no one deliberates about what cannot be otherwise. Consequently, the calculative is one part of what has reason. (*Nic. Eth.* VI.1 1139a3–15)¹⁹

Aristotle starts the argument by assuming that the two kinds of reason are parts. He then offers a reason for why the two must be different parts rather than one. He is here not so much giving a reason for saying that the kinds of reason count as parts of the soul, as he is giving grounds for why, given that they are parts, they must be different parts. The explanation is that they have objects of quite different kinds. They will then, on the object criterion, differ fundamentally as capacities, and so they can hardly be the same part.²⁰ Rather they are showing a fundamental difference as capacities, which is ‘natural’ to parts. The difference between their objects is indeed great: they are not just different but different in *genos* (*genos*). *Genos* need not mean genus within a taxonomy, let alone ‘highest genus’, but, as Pellegrin has argued, *genos* does indicate a level of generality at which the term is available for further division.²¹ In the context of stressing that the difference between the scientific and the calculative abilities is so great as to be comparable to the difference between the non-rational and rational parts, it seems likely that *genos* is being used to stress the degree of difference between the objects of the two abilities.

So, the *Nic. Eth.* tells us that the scientific or theoretical capacity has to be treated as distinct from the calculative and practical capacity. In the *DA*, the distinction between theoretical and practical reason is clearly assumed by Aristotle in his discussion of locomotion, where he divides *nous* or the rational part (*to logistikon*) into theoretical *nous* and the *nous* and *dianoia* that orders us to move, also referred to as practical *nous* (432b26–433a6, a14). As in the *Nic. Eth.* the distinction is made with reference to the distinct objects of the two kinds of rational capacity.²² The distinction seems corro-

¹⁸ The point is worth underlining in relation to the discussion of parthood in Chapter 3: Aristotle is not showing why the theoretical or practical reasons are parts, but in assuming that they are parts he is arguing that they must be different, because they display a difference that is natural to different parts.

¹⁹ πρότερον μὲν οὖν ἐλέχθη δι’ εἶναι μέρη τῆς ψυχῆς, τό τε λόγον ἔχον καὶ τὸ ἄλογον· νῦν δὲ περὶ τοῦ λόγον ἔχοντος τὸν αὐτὸν τρόπον διαιρετέον. καὶ ὑποκείσθω δύο τὰ λόγον ἔχοντα, ἐν μὲν ᾧ θεωροῦμεν τὰ τοιαῦτα τῶν ὄντων ὅσων αἱ ἀρχαὶ μὴ ἐνδέχονται ἄλλως ἔχειν, ἐν δὲ ᾧ τὰ ἐνδεχόμενα· πρὸς γὰρ τὰ τῷ γένει ἕτερα καὶ τῶν τῆς ψυχῆς μορίων ἕτερον τῷ γένει τὸ πρὸς ἑκάτερον πεφυκός, εἴπερ καθ’ ὁμοιότητά τινα καὶ οἰκειότητα ἡ γνώσις ὑπάρχει αὐτοῖς. λεγέσθω δὲ τούτων τὸ μὲν ἐπιστημονικὸν τὸ δὲ λογιστικόν· τὸ γὰρ βουλευέσθαι καὶ λογίζεσθαι ταῦτόν, οὐδεὶς δὲ βουλεύεται περὶ τῶν μὴ ἐνδεχομένων ἄλλως ἔχειν. ὥστε τὸ λογιστικὸν ἐστὶν ἐν τι μέρος τοῦ λόγον ἔχοντος.

²⁰ For them to be the same part there would have to be some definitional dependence between two, as we saw in Chapter 3.

²¹ Pellegrin (1986) 86, 97.

²² Cf. 432b27–9: ὁ μὲν γὰρ θεωρητικὸς οὐθὲν θεωρεῖ πρακτόν, οὐδὲ λέγει περὶ φευκτοῦ καὶ διωκτοῦ οὐθὲν, αἰεὶ δὲ ἡ κίνησις ἢ φεύγοντός τι ἢ διώκοντός τί ἐστιν.

borated by Aristotle's references to the reasoning (*dianoia*) or calculative (*logistikê*) soul specifically in contexts of action.²³ The focus in the rather scappily organized chapters of *DA* III.4–8 seems to be on theoretical *nous*; perhaps because attention will be paid to practical *nous* in the account of locomotion, as of course in the ethical works. However, particularly III.7–8 seems concerned to establish some general claims about both theoretical and practical *nous*: that all *nous* is a capacity to become like its objects, that all *nous* involves *phantasmata*. The conclusion that practical *nous* and theoretical *nous* are distinct capacities with distinct objects also allows, then, for certain general points to be true of both *qua nous*.

No doubt we also need to think of both parts as having reasoning and computational abilities: practical reason will reason about ways to achieve an end, theoretical reason will think of ways to reach a conclusion, theoretical will divide two numbers, practical reason will measure which of two possible outcomes is the greater good. By distinguishing the rational capacities according to their proper objects we do not need to deny them shared rational competencies. If theoretical and practical *nous* share rational processing at some level of generality it might also explain why Aristotle thinks he can clarify *nous* in general at the start of *DA* III.4 by saying that it is 'by which we reason and form suppositions'. These are activities that offset the rational capacities from other capacities of the soul, but not the rational capacities from each other.

To conclude: the two rational capacities seem to be different at a more fundamental level than the perceptual capacities. The perceptibles were different in species from each other, the perception of common perceptibles was the perception of each of the special senses by virtue of a common capacity, while accidental perception was a function of the special senses as unified. The difference between the practical and theoretical intelligibles seems more basic, at more a generic level than that between the perceptibles; however, they can still be understood as forms of *logos*, in a way that allows us to think generally of *nous* as a rational capacity.

The Theoretical Intellect

A mainstay of the argument of this book has been the claim that the capacities that serve to define the soul in the *DA* are natural. Moreover, they are natural according to the *Physics*' notion of nature as an inner principle of change: for living beings the soul is an inner principle of change. What makes living beings *natural* is that they have such an inner principle of change. What makes them *living* is that for them their inner principle is a soul or part of a soul: to be a living being is to have an inner principle of change and rest, where that inner principle does at least one of the things that only souls do. It is worth stressing, then, that where Aristotle's naturalism about the soul properly begins is not with the claim that living beings are composites of form and matter, nor with the

²³ 431a14: διανοητικὴ ψυχὴ; 433a2: διανοίας; 433a14: νοῦς ὁ ἐνεκα του λογιζόμενος καὶ ὁ πρακτικός; 433a18: διάνοια πρακτική;

claim that living beings are subject to change, but with the claim that they have within themselves an inner principle of change and rest and that the soul is such a principle.

There is reason to doubt, however, whether the theoretical intellect serves as such a principle. This point is brought out clearly in a passage from the *PA* I.1:

However, it is not the case that all soul is an origin [principle, *arkhê*] of change, nor all its parts; rather, of growth the origin is the part which is present even in plants, of alteration the perceptive part, and of locomotion some other part, and not the rational; 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. (641b5–9, transl. Lennox (2001))

Aristotle signals early on in the *DA* that the theoretical intellect may be exempt from the natural philosophical study of the soul. In I.1 the point was put in terms of the relationship between the affections of the soul and the body. If it is possible for any affection to be separate from the body it seemed to be thinking (*noein*, 403a8). This raised the possibility that *nous* should not be studied by natural philosophy but, perhaps, by first philosophy (cf. 403b16). After the common account of the soul in *DA* II.1, Aristotle again left the door open for some part of the soul that might be separable from the body (413a4–5). In II.2, in the context of the separability of the various parts of soul, he said ‘about the theoretical capacity (*dunamis*) nothing is yet clear, but it seems to be another kind (*genos*) of soul, and it seems possible for this alone to be separated, as the eternal from the mortal’ (413a24–7). In II.3 he approached the matter from the point of view of the serial dependency of the kinds of soul, saying ‘about the theoretical intellect there is another account’ (415a11–12).

On the other hand, one might think that there are reasons why *nous*, in some shape or form, should be subject to the same kind of analysis as the other capacities of the soul. *Nous* was one of Aristotle’s original examples of parts of soul and their functions, with intelligible (*noêta*) showing the priority in the account of the objects to the activity (*noein*) (*DA* I.1 402b12–16). Presenting the causal account of the soul in II.2, Aristotle used *nous* as one of the ways in which we say that something is alive. In II.5 perception was analysed as a kind of change alongside theoretical thinking: we might think then that if learning, having knowledge, and manifesting knowledge do not count as changes for which the intellect is responsible, then nor should the capacity of perception count as a principle of change. As for the separability from the body, already I.1 seemed to imply that *nous* did depend on the body through depending on *phantasia*, and as we saw Aristotle affirms in *DA* III.7 that thinking, including the theoretical variety, always requires the presence of a *phantasma*. We cannot then assume that Aristotle’s suggestions that the theoretical intellect might fall outside of the scope of natural philosophy reflect his final say.

The amenability of the theoretical intellect to natural philosophical explanation is then an open matter until we reach *DA* III.4–5. It is already apparent from the start of Aristotle’s account that he wants us to understand *nous* in analogy with the perceptual capacities. One way of judging the extent to which the theoretical intellect complies

with the natural philosophical approach is by the extent the theoretical intellect follows the example of the senses.

If thinking (*to noein*) is like perceiving, it is either a kind of being affected by the intelligible (*to noëton*) or some such other thing. It is necessary then for it to be unaffected, but able to receive the form and in capacity such as it but not this, and it has to be similar, just as the sense-faculty is in relation to the sensibles so the intellect is in relation to the intelligibles. (429a13–18)

The first implication of the analogy between the intellect and the senses is that the intellect is passive in relation to its objects. The intellect is a capacity to be changed by certain objects, the intelligible forms, just as the sense-faculty is the capacity to be changed by the sensible forms. Exercising one's *nous* is to manifest one's receptivity to what is knowable.

However, two points seem immediately to undermine the analogy with perception. One is the claim that '*nous* thinks everything' (429a18). If this was true without qualification, then *nous* would also think the perceptibles and *nous* would not have a distinctive object in terms of which we could define it. The basis of Aristotle's reply is that *nous* thinks everything *qua* intelligible, while perception perceives things *qua* perceptible. What is characteristic of intelligibles emerges from Aristotle's contrast with perceptibles:

Since magnitude is one thing and being a magnitude another, and water and being water (and the same holds for many other cases, but not all, for in some cases they are the same), one discerns what it is to be flesh and flesh by something different or by the same thing differently disposed. For there is no flesh without matter, but just as the snub, it is this thing in this thing. For one discerns the hot and the cold by the sensory [capacity], and the things of which the flesh is a kind of account (*logos*). But one discerns what it is to be flesh by something else, which is either separable or as the bent line is towards the same line when it has been straightened out. Again, in the case of abstract entities the straight is like the snub: for it is found together with continuity, while the essence is something else, if what it is to be straight is different from the straight (let it be duality). So one discerns [these] by a something else or by the same thing differently disposed. Generally, then, as the subject-matters are separable from the matter, so also are the attributes of the intellect (*nous*). (429b10–23)²⁴

When we perceive flesh, say by touching it, we perceive it as hot or cold; when we think about it we think about what makes it flesh, which is the account of what flesh is, the *logos*. I take the comparison of perception with a bent line and *nous* with a straight to be that it is by *nous* that you can see how long the line really is. Additionally, the

²⁴ ἐπεὶ δ' ἄλλο ἐστὶ τὸ μέγεθος καὶ τὸ μεγέθει εἶναι, καὶ ὕδωρ καὶ ὕδατι εἶναι (οὕτω δὲ καὶ ἐφ' ἐτέρων πολλῶν, ἀλλ' οὐκ ἐπὶ πάντων· ἐπ' ἐνίων γὰρ ταυτὸν ἐστὶ), τὸ σαρκὶ εἶναι καὶ σάρκα ἢ ἄλλω ἢ ἄλλως ἔχοντι κρίνει· ἡ γὰρ σὰρξ οὐκ ἄνευ τῆς ὕλης, ἀλλ' ὥσπερ τὸ σιμόν, τόδε ἐν τῷδε. τῷ μὲν οὖν αἰσθητικῶς τὸ θερμὸν καὶ τὸ ψυχρὸν κρίνει, καὶ ὅν λόγος τις ἡ σὰρξ· ἄλλω δέ, ἥτοι χωριστῶ ἢ ὡς ἡ κεκλασμένη ἔχει πρὸς αὐτὴν ὅταν ἐκταθῇ, τὸ σαρκὶ εἶναι κρίνει. πάλιν δ' ἐπὶ τῶν ἐν ἀφαιρέσει ὄντων τὸ εὐθὺ ὡς τὸ σιμόν· μετὰ συνεχοῦς γὰρ τὸ δὲ τί ἦν εἶναι, εἰ ἔστιν ἕτερον τὸ εὐθεῖ εἶναι καὶ τὸ εὐθύ, ἄλλω· ἔστω γὰρ δυάς. ἐτέρω ἄρα ἡ ἐτέρως ἔχοντι κρίνει. ὁλως ἄρα ὡς χωριστὰ τὰ πράγματα τῆς ὕλης, οὕτω καὶ τὰ περὶ τὸν νοῦν.

straight line gives you a length by which you can measure other things. The difference between thinking about flesh and perceiving might then be put in terms of thought telling you what flesh is, while perception provides a perspective on its non-essential attributes.²⁵ Or better: perception provides a perspective on a thing's attributes, irrespective of whether they are essential or not; so it would not be impossible in principle to perceive a thing's essential attributes, but one would not perceive them as *essential*.

We can, then, separate the objects of thinking and perceiving. Aristotle draws the inference that 'one discerns [these] by a something else or by the same thing differently disposed'. The thought is that the relationship between the intelligible and the perceptible is mirrored in the thinker in the relationship between what is responsible for thinking and what is responsible for perceiving. If the objects are different, it seems clear that the capacities are different too. But what if they are the same thing differently disposed? One might think that this would allow for active perception and thinking to be exercises of the same capacity, or perhaps part of the soul.²⁶ However, the implication of 'being by the same thing differently disposed' seems not to be to question that the perceptual and the intellectual are different capacities. That claim, as we have seen, is firmly grounded in the distinction between their different objects. The point is rather to highlight that the intellectual capacity need not be separable from the perceptual capacity in the sense that it exists or can exist separately from it, just as the *logos* that defines flesh cannot exist separately from the hot and the cold which we perceive. Recall the opening question of the chapter of whether the intellectual part was separable or not separable in magnitude but in account (429a11–12). The answer given now for thinking about intelligibles, such as what it is to be flesh, is that it is not separable without qualification (429b16: *khôristôî*) but only in account. The situation differs, however, in the case of thinking about those intelligibles which, unlike flesh, are not realized in matter. Here, given the parallel between the status of the intelligible

²⁵ Cf. *Metaph.* I.1 981b10–14: ἐτι δὲ τῶν αἰσθήσεων οὐδεμίαν ἡγούμεθα εἶναι σοφίαν· καίτοι κυριώταται γ' εἶσιν αὐταὶ τῶν καθ' ἕκαστα γνώσεις· ἀλλ' οὐ λέγουσι τὸ διὰ τί περὶ οὐδενός, οἷον διὰ τί θερμὸν τὸ πῦρ, ἀλλὰ μόνον ὅτι θερμόν.

²⁶ The latter is suggested by Whiting (2002) 159–60. Her argument against taking the subject of what is different in being but one in number to be soul is that Aristotle never says of the nutritive soul that it is so related to the perceptual soul. But this is not quite true if we recall *DA* II.2: Aristotle at 413b16–21 clearly envisages that the nutritive capacity is one of the differences (cf. οὕτως ὁρώμεν καὶ περὶ ἑτέρας διαφορὰς τῆς ψυχῆς . . .) which belong to the unitary soul of animals, and which cannot be separated off in place, but only in *logos*. Moreover, if the subject is a soul unitary in place, of which the different constitutive capacities are separate only in account, this would give us the desired contrast, both in II.2 and in the passage we are now considering, with theoretical *nous*, which is, at least as agent intellect, separable *simpliciter*. One difficulty with Whiting's suggestion of taking the subject to be the part is then to make sense of how a part of the soul, such as the perceptual, counts as separable in magnitude in relation to another part such as the nutritive (153), given that almost the entire animal body, and in particular the heart, serves both capacities (cf. *GA* II.5 741a1–13; *Iuv.* 468a14–469b20). Whiting talks of the parts as different 'physiological systems' (152) but since the bodily parts involved seem to be spatially coextensive or at least overlapping, it is hard to see how difference in place works to distinguish them. For a critique of Whiting's reading, see further Corcilius and Gregoric (2010).

vis-à-vis matter and the intellectual capacity *vis-à-vis* the perceptual capacity, it may be that the intellect that thinks of immaterial intelligibles can exist separately from the perceptual capacity. We shall return to this case.

We have seen that Aristotle carves out a notion of the intelligible as distinct from the perceptible, thereby satisfying the object criterion for the distinctness of the intellectual and perceptual capacities. So far then we seem to have an analysis of the intellect as a capacity on a par with that of the senses, subject to the same causal principles. However, Aristotle also infers from the claim that *nous* can think everything that there is no organ of *nous*. This point seems again to put *nous* on collision course with his previous understanding of capacities, as a first fulfilment of the body. So, to recall, Aristotle said in *DA* II.1:

As then cutting and seeing are a fulfilment so also is being awake, and as the ability to see and the capacity of the tool, so is the soul [a fulfilment]: and the body is what is in potentiality. But just as the eye is eye-jelly and the ability to see, so also in the other case are the soul and the body [together] the animal. (412b27–413a3)

Here sight was one with the eye as its first fulfilment. The account of sight in II.5 brought out this relationship between the capacity and organ: the eye as transparent contributed to the capacity to be acted on by colour, since the transparent is what has the ability to be acted on by the colour of something else. Similarly, in his account of the other senses, Aristotle identified sense-organs with properties that helped provide them with the capacities to be acted on by the relevant sense qualities: the inner ear contained still air, capable of reverberating to incoming sounds, the sense-organ of touch was composed of all the four simple bodies and thereby able to be acted on by all the four qualities of body, and so on. The composition of the organs was in this way geared to the reception of a particular sensory quality or set of sensory qualities. By being composed in this way, the various senses could respond to just this kind of sensory quality rather than others. One might say that the senses were primed to perceiving certain sensory qualities by already being like them at a high level of potentiality, that of first fulfilment.

In *DA* III.4 Aristotle contrasts the way in which the senses are prepared to perceive certain objects by virtue of the composition of their organs with the way in which the intellectual capacity is capable of thinking all things and therefore can have no proper organ. He explains that if the intellect was mixed with the body ‘it would be of a certain quality, either cold or warm, and there would be a certain organ, just as there is for the sensory part’ (429a25–6). While one might think that a positive determination of the intellect by its organ would make it particularly capable of thinking certain things—just as taste is capable of becoming dry by its organ’s being actually wet—such an organ would also prevent the intellect from thinking about other things,²⁷ and as

²⁷ 429a20–1: *παρεμφαινόμενον γὰρ κωλύει τὸ ἀλλότριον καὶ ἀντιφράττει*. The point and the language recall Plato’s description of the receptacle in *Timaeus* 50e1–51a3: *ὁμοιον γὰρ ὃν τῶν ἐπεισιόντων τινὶ τὰ τῆς*

Aristotle said the intellect is able to think all things. Therefore, there can be no organ of thought, and in that way, as Anaxagoras said, *nous* is unmixed with the body.

This argument reflects the fundamental difference, pointed out in *DA* II.5, between the intellect and the senses that the state of our intellect prior to education is that of first potentiality, while our senses are at the level of first fulfilment. The claim that we are able to think all things is not to be taken in the sense that we can all without further ado think about mathematics, chemistry, philosophy, and ethics. The claim is rather that we can learn any of those things, and once we have learnt, then we are in position to think about them whenever we like (429b5–9). However, even at this stage of first fulfilment, the intellect is still not determined in the way the senses are, that is in such way that it cannot also think of other things. Aristotle insists that the intellect is nothing until actually thinking (429b30–1). This may be because he believes that the ability to think all things remains as a condition for the intellect as a whole. So it is not the case that by learning mathematics we thereby exclude the ability to learn chemistry or philosophy. The intellect by being informed by mathematical truths does not lose its ability to take on truths of chemistry and think of those or any other truths. So it is not as if the intellect by being determined by a certain kind of intelligible information at the level of first fulfilment thereby becomes determined in a way that excludes it from being determined by other kinds of intelligible information, the way a sense-faculty's being informed by the form of one kind of special sensible at a level of first fulfilment excludes its being informed in this way also by the form of another kind of special sensible.

This argument serves to exclude a dedicated organ for the intellect. So the capacity of the intellect escapes the specific kind of hylomorphic explanation, whereby the capacity is to be understood as the form of its own proper organ. However, it does not follow that theoretical thinking eludes *any* hylomorphic explanation, specifically not the sort of explanation Aristotle referred to in *DA* I.1, whereby an affection of the soul was to be fully explained only by including an account of the necessary bodily affection. For while thinking may not be an activity of a specific bodily part, dedicated to thinking in the manner of an organ, it may still involve necessary bodily affections.

The obvious candidates for such affections are those of *phantasia*. *DA* I.1 suggested that *nous* depended on the body via *phantasia*. We saw in the last chapter how imagination depends on perception and therefore on the sense-organs. It is a change caused by perception, which remains in the sense-organs after perception (425b25).

ἐναντίας τὰ τε τῆς τὸ παράπαν ἄλλης φύσεως ὁπότ' ἔλθοι δεχόμενον κακῶς ἂν ἀφομοιοῖ, τὴν αὐτοῦ παρεμφαῖνον ὄψιν. διὸ καὶ πάντων ἐκτὸς εἰδῶν εἶναι χρεὼν τὸ τὰ πάντα ἐκδεχόμενον ἐν αὐτῷ γένει, καθάπερ περὶ τὰ ἀλείμματα ὅποσα εὐώδη τέχνη μηχανῶνται πρῶτον τοῦτ' αὐτὸ ὑπάρχον, ποιοῦσιν ὅτι μάλιστα αἴωδη τὰ δεξόμενα ἢ γὰρ τὰς ὁσμὰς· ὅσοι τε ἐν τισιν τῶν μαλακῶν σχήματα ἀπομάττειν ἐπιχειροῦσι, τὸ παράπαν σχῆμα οὐδὲν ἔνδηλον ὑπάρχειν ἑώσι, προμαλύναντες δὲ ὅτι λειότατον ἀπεργάζονται. ταῦτ' οὖν καὶ τῷ τὰ τῶν πάντων αἰεὶ τε ὄντων κατὰ πᾶν αὐτοῦ πολλάκις ἀφομοιώματα καλῶς μέλλοντι δέχεσθαι πάντων ἐκτὸς αὐτῷ προσήκει πεφυκέναι τῶν εἰδῶν.

Moreover, Aristotle talked of our dreams as images occurring in the blood, distorted by the commotion of the blood in our sleep.

Aristotle is clear that both practical and theoretical thinking depend on *phantasia*. In the case of practical thinking, *phantasia* presents an image of something capable of provoking pursuit or flight (431b3). In the case of theoretical thinking, he explained, as we saw in the last chapter, that ‘whenever we contemplate (*theôreî*) it is necessary at the same time to contemplate an image’ (432a8–9). Aristotle continues the discussion of the relationship between *phantasia* and thinking in *Mem.1*:

We have spoken about the imagination earlier in the *DA*. And thinking is not possible without an image (*phantasma*)—for the same affection occurs in thinking that also takes place in diagrams: for in this case while we make no use of the triangle having a definite quantity, nonetheless we draw a triangle with a definite quantity, and the thinking [person] in the same way, if he thinks something which is not a quantity he places before his eyes a quantity, while he does not think of it as a quantity; and if the nature [of what he is thinking of] is a quantity, but an indefinite one, he puts before his eyes a definite quantity, but thinks of it as a quantity only. It is another story why it is not possible to think anything without continuity, nor timeless matters without time, but it is necessary to cognise magnitude and change by that with which one also cognises time.²⁸ So it is clear that the cognition of these is by the first sensory faculty. Memory, also of the intelligibles, is not without an image, and the image is an affection of the common sense, so that memory would belong accidentally to the intellect but in itself to the first sense-faculty. (449b30–450a14)²⁹

The passage leans on Plato’s description in *Republic VI* of how mathematicians use images when thinking about geometrical figures: they make a diagram of a particular square, say, but what they are talking about is not this square but a square as such. In the same way, we put before our mental eye images of what we are thinking about, though it is not the images we are concerned with but what they are images of. Since the presentation of the image is a function of the common sense, thinking necessarily involves an affection of the body, that is, an affection of the organ of the common sense.

Assume now that the *phantasma* occurs as an affection of the common sense-organ; for the sake of argument let’s say as an image in the blood. Is the relationship between the act of thinking and this bodily affection on a par with the relationship, as described

²⁸ Following Freudenthal’s transposition to 13–13a of *καὶ τὸ φάντασμα τῆς κοινῆς αἰσθήσεως πάθος ἐστίν*.

²⁹ ἐπεὶ δὲ περὶ φαντασίας εἴρηται πρότερον ἐν τοῖς περὶ ψυχῆς, καὶ νοεῖν οὐκ ἔστιν ἄνευ φαντάσματος—συμβαίνει γὰρ τὸ αὐτὸ πάθος ἐν τῷ νοεῖν ὅπερ καὶ ἐν τῷ διαγράφειν· ἐκεῖ τε γὰρ οὐθὲν προσχρώμενοι τῷ τὸ ποσὸν ὀρισμένον εἶναι τοῦ τριγώνου, ὅμως γράφομεν ὀρισμένον κατὰ τὸ ποσόν, καὶ ὁ νοὼν ὡσαύτως, κἂν μὴ ποσὸν νοῇ τίθεται πρὸ ὀμμάτων ποσόν, νοεῖ δ’ οὐχ ἢ ποσόν· ἂν δ’ ἡ φύσις τῶν ποσῶν, ἀορίστων δέ, τίθεται μὲν ποσὸν ὀρισμένον, νοεῖ δ’ ἢ ποσὸν μόνον—διὰ τίνα μὲν οὖν αἰτίαν οὐκ ἐνδέχεται νοεῖν οὐδὲν ἄνευ συνεχοῦς, οὐδ’ ἄνευ χρόνου τὰ μὴ ἐν χρόνῳ ὄντα, ἄλλος λόγος· μέγεθος δ’ ἀναγκαῖον γνωρὶ ζεῖν καὶ κίνησιν ὧ καὶ χρόνον· [καὶ τὸ φάντασμα τῆς κοινῆς αἰσθήσεως πάθος ἐστίν] ὥστε φανερόν ἐστι τῷ πρώτῳ αἰσθητικῷ τούτων ἢ γνώσεως ἔστιν· ἢ δὲ μνήμη, καὶ ἢ τῶν νοητῶν, οὐκ ἄνευ φαντάσματος ἔστιν, <καὶ τὸ φάντασμα τῆς κοινῆς αἰσθήσεως πάθος ἐστίν>· ὥστε τοῦ νοῦ μὲν κατα συμβεβηκὸς ἂν εἴη, καθ’ αὐτὸ δὲ τοῦ πρώτου αἰσθητικοῦ.

in *DA* I.1, between anger as a desire for revenge and the boiling of the blood around the heart? On the one hand, we may say that in both cases the bodily affection is hypothetically necessary for the formal activity: no anger without boiling of the blood, no thinking without an image in the blood. However, Aristotle says in the passage just quoted from *Mem.*1 that the *phantasma*, and so presumably any necessary material change involved in the *phantasma* as such, belongs to the sensory faculty as such, but to the intellect only accidentally. This suggests that from the point of view of *thinking* as such the *phantasma*, and any accompanying necessary bodily changes, are accidental.

To answer the question of the last paragraph fully, however, we need to look more carefully at the relationship between the intelligible forms and the *phantasmata*. Together with *Mem.*1 consider *DA* 432a3–10:

Since there is nothing separate, as it seems, apart the perceptible magnitudes, the intelligibles are in the perceptible forms, both those entities that are said by abstraction and those entities that are states and affections of perceptible things. And because of this somebody who does not perceive would neither learn nor understand anything, and whenever he contemplates, it is necessary that he contemplate together with an image. For the images are like the percepts (*aisthēmata*), apart from being without matter.³⁰

What does Aristotle mean by saying that the intelligible forms are ‘in’ the perceptible forms? It is fairly easy to see how the form of triangle might be said to be in various perceptible triangles. The mathematician, as we are told, abstracts the form of triangle from the various material triangles in the world. No doubt we also learn that there are triangles by seeing them in the world, so if we had not perceived them we would not have tried to learn about them. Here the intelligible form ‘being in the perceptible form’ might mean something like ‘instantiated in perceptible forms’: we see and learn about triangle from perceptible instances of triangle. *Phantasia*, by way of memory images, preserves what is perceived, so that in the absence of perceptible triangles in the environment, we use these as the basis of our considerations as to what a triangle is. Indeed, as a basis of abstraction remembered triangles might be more useful than currently perceived triangles in that they may allow us to compare and contrast a wider range of different triangles. This much seems consistent with the role Aristotle assigns to memory in coming to grasp essences in *APo* II.19. We might, then, think of the role of the *phantasmata* as that of a basis for abstraction, where the attribute abstracted is thought of in itself and not as an attribute of this or that object remembered.

However, what about the other case of ‘entities that are states and affections of perceptible things’? We need not presuppose that Aristotle has the same account in mind as in the mathematical case, but clearly the two should be compatible. If we take

³⁰ ἐπεὶ δὲ οὐδὲ πρᾶγμα οὐθὲν ἔστι παρὰ τὰ μεγέθη, ὡς δοκεῖ, τὰ αἰσθητὰ κεχωρισμένον, ἐν τοῖς εἶδεσι τοῖς αἰσθητοῖς τὰ νοητὰ ἔστι, τὰ τε ἐν ἀφαιρέσει λεγόμενα καὶ ὅσα τῶν αἰσθητῶν ἔξεις καὶ πάθη. καὶ διὰ τοῦτο οὐτε μὴ αἰσθανόμενος μὴθὲν οὐθὲν ἂν μάθοι οὐδὲ ξυνείη, ὅταν τε θεωρῇ, ἀνάγκη αἶμα φάντασμά τι θεωρεῖν· τὰ γὰρ φαντάσματα ὥσπερ αἰσθήματα ἔστι, πλὴν ἀνευ ὕλης.

'states and affections' broadly to include essential attributes, we may take flesh as an example again. Flesh is perceptible, indeed its material attributes, as hot and cold, are *per se* perceptible. What we try to understand intellectually is the *logos* of flesh as perceived, which expresses the essence of flesh. Generally, we may say that we try to understand the form structuring the various perceptible attributes of the things we encounter in the world. When we think about what they are, their perceptible attributes are present to us because we think of the form as the form of those perceptible attributes, just as we think of the essence of flesh as a *logos* of the hot and the cold, and these attributes are given to us by touch. When we think of forms that are forms of perceptible entities, like flesh, we require perception or memory to present the perceptible qualities as a substrate for the intelligible form.

But why not present perceptible qualities in a non-perceptual mode when thinking about their *logos*? So one might think of pink as a ratio of white and red but not present white and red to oneself as if one was seeing them (perhaps one could think of these too in terms as certain ratios). The probable answer is because it is by perception that one properly discerns white and red, or hot and cold. Recall that the perception is the primary mode of cognition (*krinein*) of perceptual attributes. Presenting the perceptible qualities in a perceptual mode is presenting them in the cognitive mode which is most proper to them. Such perception, at least in the case of qualities like hot and cold, is rarely if ever wrong. Perception is then the most proper way of fixing the attributes for which the form is supposed to provide the *logos*. We can see *phantasia* as the perceptual mode by which perceived qualities are remembered and presented to us in thinking.

As we saw, Aristotle suggested in *DA* III.4 that the relationship in thinking between the intellect and the capacity of perception mirrors the relationship between the intelligible and the perceptible objects. The passage we have been looking at, *DA* 432a3–10 seems to develop this point. Just as the intelligible form is found in the perceptible forms, so the intelligible form is thought in the perceptible forms as presented to us by *phantasmata* (431b2). The claim that the intelligible forms are thought in, or with, or not without *phantasmata* thus mirrors the claim that the intelligible forms are found in the world in the perceptible forms. The reason why the intelligible form has to be thought in the *phantasmata* seems to be the same as the reason why the intelligible forms have to be in the perceptible forms outside of us: just as the essence of flesh exists as the essence of perceptible flesh, so the essence of flesh is thought of as the essence of perceptible flesh. For that reason thinking about the essence requires the engagement of *phantasia* as the representation of perceptible flesh; and for that reason we can say that the exercise of the intellect is inseparable from that of the perceptual faculty.

However, it should be clear that this does not imply that the intelligible is not separable in form or in account from the perceptible form presented in the *phantasma*. While the intelligible form is the essence of the perceptible object, it is not itself perceptible. We perceive the flesh but not its *logos*; and while we imagine hot and cold when we think about their *logos*, our thinking is about the *logos* of hot and cold, not hot and cold as such. It does not follow, therefore, from thinking being's dependent on

phantasia, in the way that has emerged, that the intellect is the same capacity as the perceptual.³¹ What we think about is not the same as what we perceive. Since the ability to think the intelligible forms is presented as the ability to be acted on by the intelligible forms, this ability has to be different from the ability of the perceptual capacity too. If we refer to the ability to be acted on by forms by its traditional name of 'passive intellect', it should be clear then that the passive intellect is not *phantasia* or the perceptual faculty. Aristotle makes the point explicit by denying intellect to animals with *phantasia*.³² The correct position seems then to be that the passive intellect is inseparable from the perceptual faculty in magnitude but separable in account.

Let's take stock. Aristotle has introduced a new faculty in the intellect, with a distinct kind of object, intelligible forms. This passive intellect has no organ, and is in that sense unmixed with the body. It does, however, spatially coincide with the perceptual capacity, and necessarily so, since the intelligible forms are only to be found together with the sensible forms presented by the perceptual capacity by way of *phantasia*, and are grasped as the essence of the features presented by *phantasia*.

The necessity for material affections in the body to occur while we are thinking is not a function of what thinking itself is but a function of *phantasia*. The material affections are explanatorily tied not to the process whereby the soul thinks the intelligible forms as such but to the process by which the perceptible forms are presented of which the intelligible forms are the essence. The affections the body undergoes when we think may be viewed then as an existential precondition of thinking. In that sense, it remains true to say that thinking is 'not without the body'. However, such bodily affections are not hypothetically necessary in the sense that they follow from the account of thinking as such. This is the crucial point that offsets the intellectual affections from those affections common to the soul and body that we looked at in *DA* I.1. From the point of view of thinking as such, any material change that happens in *phantasia* is, therefore, *per accidens*. In contrast, 'boiling of the blood around the heart' is part of the account of the sort of change that anger is. An account of anger was only thus complete once the affection of the body had also been accounted for; while an account of the material changes that happen in *phantasia* do not enter into the account of what thinking is. Thinking, then, eludes the standard natural philosophical account of the affections of the soul.

Might one not insist that material changes are hypothetically necessary for thinking to occur by the transitivity of hypothetical necessity? So if *phantasia* is hypothetically necessary for thinking and material changes are hypothetically necessary for *phantasia*, such changes will also be hypothetically necessary for thinking? It is important here to distinguish between two notions of hypothetical necessity: one kind which involves merely an existential dependency and which may be understood as transitive; another kind which is also explanatory, as conceived within Aristotle's framework of the four

³¹ As Aquinas points out, *In Aristotelis De Anima Commentarium* §693.

³² *DA* III.3 428a19–24; *Mem.* 450a15–19.

causes, and which is not as such transitive. There is clearly a large number of existential preconditions for any activity, but most of these are not explanatorily relevant to the particular activity as such. So gravity is necessary for playing football, but not in a way that is explanatory to football as such. In contrast, Aristotle's notion of hypothetical necessity seems particularly intended to pick up on those causal factors that are explanatorily relevant to the phenomenon as such. Being made of wood and iron is directly relevant to the axe's ability to function as an axe, being transparent is directly relevant to the eye's ability to take on colour, and so forth. In contrast, having a (any) colour may be an existential precondition of both axe and eye (and follow from their having a certain kind matter) but it does not contribute as such to the function that makes them an axe or an eye. Similarly, in the case of thinking the movements in the blood may be required for *phantasia* to occur, and may therefore be an existential precondition for thinking, but they are not *explanatorily* required by what thinking is as such. The *phantasia* of perceptible qualities is explanatorily required, but the material changes by which this happens are not.

The material changes indirectly involved in thinking therefore fall outside the scope of the standard hylomorphic account, though we may still say that they show the way in which thinking is existentially dependent on material changes. Thinking only happens in natural beings like us, who are such as to undergo material changes of the sort involved in perception. It would be wrong to say therefore that the sort of thinking we have been considering falls completely outside the scope of natural philosophy: while we do not understand *what* thinking of this sort is with reference to material changes, we do need to understand *how* thinking can occur with reference to such changes.

Now the sort of thinking we have been concerned with so far has been thinking of abstract intelligibles, like square, and intelligibles that are states and affections of matter, like flesh. These are forms that are necessarily found amongst perceptible forms. However, Aristotle's argument in *DA* III.4 leaves us with a third category of intelligible mentioned, intelligibles that exist without matter:

In the case of the intelligibles without matter what is thinking and what is being thought are the same. For theoretical knowledge and what is knowable in this way are the same (but the reason why it is not always thinking needs to be considered). (430a4–6)

What made necessary the occurrence of a *phantasma* together with thinking of the other intelligibles was that these were intelligible forms that were only found in the context of perceptible forms. However, in the case of intelligibles without matter there is no such constraint: for these are found without matter—which must mean 'only without matter'—and so not in perceptible forms. But if so, the implication is that such thinking requires no perceptual processes and so no material changes of the sort associated with *phantasia*.³³ The prospect is raised, then, that such thinking of

³³ *DA* III.8 432a7–9 says that *καὶ διὰ τοῦτο οὔτε μὴ αἰσθανόμενος μὴθὲν οὐθὲν ἂν μάθοι οὐδὲ ξυνείη, ὅταν τε θεωρῇ, ἀνάγκη ἅμα φάντασμα τι θεωρεῖν*. But since the premise of which this is the conclusion is *ἐπεὶ δὲ*

immaterial intelligibles can itself occur without any bodily preconditions. Such thinking may in other words be separable not just in account but also in magnitude from the body.

The mention of thinking of immaterial intelligibles sets up the discussion of the so-called agent intellect in *DA* III.5. This chapter is amongst the most obscure and contested in the corpus.³⁴ All one can reasonably aim at is an account which, in Plato's words, is 'no less likely than another's'.

Agent Intellect

Aristotle launches the subject as follows:

[a] Since just as in all nature there is, on the one hand, something which is matter for each kind (this is what is all those things in capacity), and, on the other hand, another thing which is the cause and maker, by virtue of making all things, such as the craft is qualified in relation to the matter, it is necessary that these differences obtain also in the soul. (*DA* III.5 430a10–14)

Now in one way the opening of III.5 is all according to plan. We know that intellection is a kind of being affected, or something like it, and so will require an efficient cause. This follows for knowledgeable thinking as it does for perceiving. The analogy with craft is of the sort we are familiar with in *Physics* II when Aristotle seeks to explicate what happens in natural causation. Strictly speaking, Aristotle says here (195b21–5), it is the craft which is the efficient cause when a craftsman makes something. In the case of perception, the sense-object was the efficient cause. But instead of referring to the intelligible object as the cause, he says something else. He says that the distinction between capacity and cause has to obtain also *in the soul*. This is strange, given the analogy with sense-perception, since the distinction there between the agent, the sense-objects, and the patient, the sense-faculty, was not a distinction within the genus 'soul'. The sense-objects are not one species of soul and the sense-faculty another.³⁵ But Aristotle is explicit that the agent of thinking is another kind of soul, namely an agent intellect:

[b] For the one intellect is such by becoming all things, the other by making all things, in the manner of a kind of disposition (*hexis*), such as light, for light in a certain way makes the potential colours actual colours. (430a14–17)

οὐδὲ πρᾶγμα οὐθὲν ἔστι παρὰ τὰ μεγέθη, ὡς δοκεῖ, τὰ αἰσθητὰ κεχωρισμένον (432a3–4) it makes sense to say that Aristotle's point here is limited to enmattered forms. It neither applies to god's thinking about himself nor to ours about him.

³⁴ For an overview of leading interpretations up until his time see Brentano (1867) 5–40. The interpretation of the agent intellect I shall be developing here is most closely aligned to those of Frede (1996), Caston (1999), and Burnyeat (2008).

³⁵ I agree with Caston's (1999) 206 'taxonomical' reading of the phrase 'in the soul', as meaning within the kind soul.

Calling the cause of intellection another kind of intellect comes, as I said, as a surprise to us, given the analogy with perception. But Aristotle immediately moves to restore the analogy: he compares the role of the agent intellect to light, that is, to the medium of sight. It is clear that the role of the agent intellect is not one that usurps that of the intelligible objects. For light does not act on the senses instead of the sense-objects; rather it enables the sense-objects to act on the senses.³⁶ Similarly, the implication seems to be that the agent intellect acts on the intelligibles so that they can act on the passive intellect. That this should be Aristotle's point might not be immediately clear. For what he says here is not that light makes the colours actually seen but that he makes them actual colours. Yet there is good reason to think that for Aristotle these are just different ways of referring to the same circumstance. For Aristotle the potentiality to be seen, that is visibility, is part of the nature of colour. In actually being seen colours actualize their nature as visible (*DA* III.2). Similarly, I take it that Aristotle wants us to think of the agent intellect as actualizing the intelligible objects' nature *qua* intelligible, such that they act on the intellect so as to make us actually think of them. The agent intellect is thus required in order to actualize the intelligibles in actual intellection, for it is in actual intellection that they actualize their nature as intelligibles.³⁷ The analogy with perception has been restored: both in thinking and in perception we have three factors: the faculty, the object, and the medium which actualizes the object's ability to act on the faculty.

What is the nature of this agent intellect? Aristotle's analogies with an art and light suggest the following points. If the agent intellect is related to the passive intellect in the way an art is related to the matter, then the agent intellect would be separate from the passive intellect. For the art is separate from the matter on which it works. Against this, one might point out that Aristotle is explicitly talking about what is true in all nature, and in nature, as we know, the efficient cause is, in various ways, internal to the patient. One might then want to insist that the analogy with art is just a partial analogy, meant to focus on the efficient causal aspect without this further implication of being external to the patient. However, the analogy with light might seem to further support the suggestion that the agent intellect is external in that light is an external medium. If this does not seem clear-cut either, because Aristotle also seems to want the light to extend inside the eye,³⁸ one might respond that the light enters into the eye from the outside, and is only inside the eye insofar as the light shines outside it. So primacy would go to

³⁶ That the agent intellect *within the terms of the analogy* works to provide the medium should not be taken to mean that it is not also *outside of the analogy* itself an intelligible, indeed the highest intelligible, as in *Republic* VII, the form of the good ends up serving both functions in the Image of the Cave.

³⁷ As Frede (1996) points out, the analogy between the intelligible and actual colours suggest that Aristotle is not simply concerned with what makes the intelligible actually intelligible but with what makes it actually thought of, for in *DA* III.2 he understands the actuality of colour as its actually being seen. The same reading is advocated by Kosman (1992) 348–50.

³⁸ Cf. *Sens.* 2 438b5–10.

light as an external source of vision, and so the agent intellect would have to primarily exist outside of the passive intellect, even if it in some sense enters into it.

This argument is still drawing out implications which may exceed the point of the analogies. It is worth, therefore, emphasizing the oddness of the alternative view, that the agent *nous* is internal to the soul that has the passive intellect. For this would imply that the same subject is actively thinking at the same time as the passive intellect is only potentially thinking, at least at those times when we are not actively thinking. Not only does it on this account become harder to explain why the subject is not always thinking, given that the agent intellect which is supposed to activate thinking is already present in the subject.³⁹ It also becomes quite mysterious how we could be unaware that such thinking is always taking place within us, if we are genuinely the subject of the agent intellect.⁴⁰

There are reasons, then, for taking the active *nous* to be external to the passive *nous*. Aristotle seems to confirm its external status when he says, immediately following the light analogy, that 'this intellect is separable and impassive and unmixed, being activity in substance' (430a18), and again, a few lines down, that 'this alone is immortal and eternal'. The agent intellect, then, is separable as a different kind of substance from the passive intellect, a substance which is always active and survives the destruction of the passive intellect (430a24).

Agent *nous* is, then, a separate substance from the mortal substance of which the passive intellect is a part.⁴¹ This notion of the agent intellect fits another detail Aristotle pointed to in III.4: that the thinking of immaterial intelligibles is the same as its object (430a3–5). The prime example of such an intelligible is god. So in *Metaph. A* 6–7 the first unmoved mover is presented as the pure activity of thinking without any matter. God is, in Kosman's celebrated phrase, 'thinking thinking thinking'. His thinking can be at one with its object, itself, because it is without any material aspect.

³⁹ Aquinas takes the agent intellect to be internal to the individual soul and necessary for it to extract the intelligible form from perceptible objects. However, it is not clear that there is such a job for the agent intellect to perform, since one may take the passive intellect's characteristic capacity exactly to be the receptivity to the intelligible forms of perceptible objects, just as it is the peculiar capacities of the senses to be able to receive just the perceptible forms of external objects.

⁴⁰ The point that we do not remember (430a23–4) seems of little use here, since the problem concerns our current state of awareness while we are thinking.

⁴¹ It could still be true that the agent intellect plays, as it were, the cuckoo's egg within the nest of the individual soul, belonging to the individual soul as a separate substance housed within it. In support of this, one might cite Aristotle's observation in *DA* I.4 that 'the intellect seems to be engendered (*egginesthai*) as a kind of substance (*ousia*), and not to be destroyed'. He argues that, while the decay of the body may occlude thinking, thinking as such remains unaffected (*apathes*). We might, in view of the dependency of passive intellect on the body in thinking about material substance explain this in terms of the failure to provide perceptual contents. However, this weakness of the body does not affect the capacity to think itself. He concludes 'the intellect is probably something more divine and impassive' (408b29). However, we should be careful about drawing firm conclusions from this passage which after all occurs in the aporetic context of Book I. *DA* III.5 takes precedence, also because the distinction between agent and passive *nous* may exactly be a clarification and partial correction of why *nous* appears to us to be a separate substance and is perhaps something more divine: it is so in the sense of agent *nous* but not in the sense of passive *nous*.

What about the special case when *we* think about god? As a thinking about an immaterial form, our thinking will not be dependent on *phantasmata*. Nor therefore will our thinking depend on any material processes. Our thinking, like god's, will in this sense also be separable from the body, impassive and unmixed (430a17–18). We might also say that while thinking about god we are thinking thinking thinking. However, this is still a case of our passive intellect thinking about god, not a case of us becoming one in substance with the agent intellect. Moreover, while sharing the state of god, we are not affected in such a way that we can remember our experience of being god since the immaterial form as immaterial does not involve any representation through perceptual images. It is this issue that I take Aristotle to be addressing in the final lines of III.5:

But when separated (*khôristheis*) it is alone what it is, and this alone is deathless and eternal. But we do not remember because this [sc. the agent intellect] is impassive, while the patient intellect is corruptible, and without this nothing thinks. (430a22–5)⁴²

These lines are often quoted in support of the view that the agent intellect must be internal to the individual soul at least during his lifetime. For otherwise it seems to make little sense either to say that the agent intellect *when separated* is only what it is or to say that we do not remember, understood after death, because the agent intellect, the only thing that survives, does not carry the experiences we have had during life. So a reading like mine which takes the agent *nous* to be god has to resist this view of agent *nous* as an integral part of the individual soul.

Let's try first to say, then, what is meant by the agent intellect being separated. Our first impression was that this meant separated from the individual soul, with the implication that it was somehow previously part of the individual soul. I would suggest instead that we understand 'separated' as meaning 'separated from our thinking', that is to say, no longer an object of our thinking. The reason why the agent intellect is separated when it is no longer thought of by us is that our thinking and it are one when we are thinking of it. For the agent *nous* is an immaterial intelligible and as such it is at one with our thinking of it. This case, then, relates directly back to the discussion in III.4 430a3–5 of the identity of thought and object in thinking of immaterial intelligibles. When the agent intellect is not thought of by us it is itself simply what it is, no longer bearing the relation of being thought of by us. The identity between our passive intellect and the agent intellect in active thinking is limited by our capacity to maintain thinking. That is why the identity that obtains between our intellect and the agent intellect in active thinking does not entail that our intellect too is deathless and eternal, or that we are always thinking thinking thinking. The sameness of our passive intellect with the agent intellect is a temporary isomorphism, not an enduring sameness of substance. Moreover, we do not remember what the agent intellect thinks, even

⁴² χωρισθεὶς δ' ἐστὶ μόνον τοῦθ' ὅπερ ἐστὶ, καὶ τοῦτο μόνον ἀθάνατον καὶ αἰδίδιον (οὐ μνημονεύομεν δέ, ὅτι τοῦτο μὲν ἀπαθές, ὃ δὲ παθητικὸς νοῦς φθαρτός).

though we are at one with it whenever we think, because the agent intellect does not remember things, being impassive, whereas our intellect, which is passive and could remember, is destructible. So while we may remember (in the qualified way allowed for by *Mem.*) what we have thought during our lifetime, we will not remember what the agent intellect as such has thought, nor of course the thoughts of other human beings with distinct passive intellects.

In conclusion, Aristotle adds ‘and without this nothing thinks’.⁴³ This claim—like everything else in the chapter—may be read in a number ways. One reading is ‘the passive intellect thinks nothing without the agent intellect’.⁴⁴ This might in turn be taken either to mean (a) that the passive intellect thinks of the agent intellect alongside whatever other intelligible form it is considering or (b) the passive intellect thinks because the agent intellect acts on it. (a) seems to be excluded by the light analogy: the light is not, in normal circumstances, a further object of vision alongside colours; similarly the agent intellect should not be a further object alongside the other intelligibles. (In any case, surely we do not think of god whenever we think of something.) However, (b) again calls for clarification of how the agent intellect acts on the passive so as bring about thinking in it.

Now the subject of the efficient causation of intellection was raised back in *DA* II.5, as a point of disanalogy with perception. While an external object was needed to trigger actual perception, Aristotle said that ‘knowledge is of the universals and these are somehow in the soul itself; for this reason coming to think (*noêsaî*) is up to oneself, whenever one wants to (*boulêtai*)’ (417b22–4). Aristotle recalls the point in *DA* III.4 when he says that somebody has become a knower in activity ‘when he is capable of activating (*energein*) [his knowledge] through himself (*dia hautou*)’ (429b7). If we ask about the efficient cause of learning, we should no doubt refer to a teacher or perceptual experience. But when it comes to the activity of thinking about what we have learnt, Aristotle’s suggestion is that the efficient cause is our wanting to think. The verb for ‘wants’ (*boulêtai*) may be meant to remind us of Aristotle’s word for rational desire (*boulêsis*). We would seem then to have a rational desire for theoretical thinking, for thinking about theoretical truths, corresponding to our rational, practical desire to do the right thing. Aristotle would be following in Plato’s footsteps, when he in the *Republic* IX presented the desire for truth to be a characteristic of reason.

If there is this parallel between theoretical and practical reason it is clear that saying that a rational desire is the efficient cause of the activity of theoretical thinking cannot be the full or precise answer. For, as Aristotle’s analysis of locomotion makes clear,⁴⁵ the efficient cause that leads us to motion is not simply desire but the desire for a certain object, the *orekton*. The efficient cause of active thinking requires mention of the object of rational desire.

⁴³ καὶ ἄνευ τούτου οὐδὲν νοεῖ.

⁴⁴ Alternatively, ‘it [sc. the passive intellect] thinks nothing’. Given that god thinks without a passive intellect, it seems unlikely the subject is the agent intellect with *τούτου* referring to the passive intellect.

⁴⁵ See the following chapter for more detail.

Now, as we saw in the account of nutrition, Aristotle has already given us an answer to what it is that all living beings desire ‘and for the sake of which they do all the things they do according to nature’, namely, to participate in the eternal and the divine in the way they can’ (*DA* 415a28–415b1). The *locus classicus* for how god, while unmoved, moves as an object of desire is *Metaphysics A* 7 (1072a24–b4).⁴⁶ God, we are told, instills desire because he is the best and rational desire (*boulêsis*) is for the real good. We are moved, then, to try to be like him. He is the final cause of our rational desire.

In *Nic. Eth.* X. 7–8 Aristotle presents the activity of theoretical reason as the highest form of participating in the divine: it is a form of imitating the very activity that characterizes god.⁴⁷ Putting these elements together, we might say, then, that the object of rational desire is to participate in the activity of theoretical thinking in the manner of god. On this reading, the efficient cause of thinking depends on this final cause: the eternal and divine activity of thinking works so as to make us think by triggering our desire to be in the same state.⁴⁸ God is, then, not a competitor to our rational desire as the efficient cause of thinking, but that which as its final cause motivates our rational desire to think. He can do so because he displays in activity the goodness of active thinking.

⁴⁶ ἔπει δὲ τὸ κινούμενον καὶ κινῶν [καὶ] μέσον, †τοῖνυν† ἔστι τι οὐ κινούμενον κινεῖ, αἰδῖον καὶ οὐσία καὶ ἐνέργεια οὐσα. κινεῖ δὲ ὥδε τὸ ὀρεκτὸν καὶ τὸ νοητὸν· κινεῖ οὐ κινούμενα. τούτων τὰ πρῶτα τὰ αὐτά. ἐπιθυμητὸν μὲν γὰρ τὸ φαινόμενον καλόν, βουλευτὸν δὲ πρῶτον τὸ ὄν καλόν· ὀρεγόμεθα δὲ διότι δοκεῖ μᾶλλον ἢ δοκεῖ διότι ὀρεγόμεθα· ἀρχὴ γὰρ ἡ νόησις. νοῦς δὲ ὑπὸ τοῦ νοητοῦ κινεῖται, νοητὴ δὲ ἡ ἑτέρα συστοιχία καθ’ αὐτήν· καὶ ταύτης ἡ οὐσία πρώτη, καὶ ταύτης ἡ ἀπλή καὶ κατ’ ἐνέργειαν (ἔστι δὲ τὸ ἐν καὶ τὸ ἀπλοῦν οὐ τὸ αὐτό· τὸ μὲν γὰρ ἐν μέτρον σημαίνει, τὸ δὲ ἀπλοῦν πῶς ἔχον αὐτό). ἀλλὰ μὴν καὶ τὸ καλὸν καὶ τὸ δι’ αὐτὸ αἰρετὸν ἐν τῇ αὐτῇ συστοιχίᾳ· καὶ ἔστιν ἀριστον αἰεὶ ἡ ἀνάλογον τὸ πρῶτον. ὅτι δ’ ἔστι τὸ οὐ ἔνεκα ἐν τοῖς ἀκινήτοις, ἡ διαίρεσις διηλοῖ· ἔστι γὰρ τινὲ τὸ οὐ ἔνεκα <καὶ> τινός, ὧν τὸ μὲν ἔστι τὸ δ’ οὐκ ἔστι. κινεῖ δὲ ὡς ἐρῶμενον, κινούμενα δὲ τὰλλα κινεῖ.

⁴⁷ For an illuminating articulation of this thought and its roots in Plato, see Sedley (1999) and Sedley (2008) 169–72.

⁴⁸ Corcilius (2009) 9–10 raises the pertinent worry that if an object of desire triggers desire insofar as it is thought of, then the object of desire cannot be the cause of our coming to think of it also: ‘if we do not wish simply to think without further qualification, but to think of something determinate, say X, then the very identification of what we wish to think about, i.e. the object of the desired thought X, requires us to be already thinking of X’. (On the problem, see also Caston (1999) 217.) Here, the antecedent may be questioned. It may be that prior to specific acts of contemplating X, one desires to contemplate, since this is the best state, that of god (just as somebody may desire to go to school because they want to be educated). It is god *qua thinking* whom we desire to imitate, and the fact that thinking always takes the form of thinking of X or Y, does not mean that one has to desire thinking of X or Y. What decides whether one on a particular occasion contemplates of X or Y will have a further answer, but this is not strictly relevant to the context of *DA* III.5, which is to explain what activates thinking. The answer to why one thinks of X rather than Y will in any case not be forthcoming in terms of desiring to be like god since god thinks about himself only, whereas human contemplation ranges over a variety of essences. But does the circularity problem not reappear in terms of thinking as an object? Do we not already need to be thinking about thinking in order to desire to think? Certainly one needs to cognitively represent thinking, perhaps even by *nous* itself (cf. *Metaph.* 1072a30 cited above, but also *MA* 6 700b18–20: ταῦτα δὲ πάντα ἀνάγεται εἰς νοῦν καὶ ὀρεξίν. καὶ γὰρ ἡ φαντασία καὶ ἡ αἰσθησις τὴν αὐτὴν τῷ νῷ χώραν ἔχουσιν.) But identifying theoretical thinking as something desirable hardly requires practicing theoretical thinking: one does not contemplate an essence or go through a proof when representing thinking as something pleasant and worthwhile. (The issue relates to the question of how desire (*boulêsis*) may be viewed as a function of *nous*, which I touch on in the next chapter.)

It might be possible to explain the role of god as a final cause of the intellect also in terms of its role as a first principle of knowledge. One might say that that god, like the Form of the Good in *Republic* VII, fulfils the intellect's potential to know at its highest level. Moreover, one could say that the god as the highest principle played a role similar to light, in the Images of the Sun and Cave, in ensuring the intelligibility of other intelligibles. For all of this one could find support in Aristotle's *Metaph.* and the *APo*.⁴⁹ It is in this light that one might view Aristotle's comment in *DA* III.4 (429b3–4) that we are able better to link lesser intelligibles after thinking about the exceedingly (*sphodra*) intelligible.⁵⁰

However, viewing the agent intellect as the highest intelligible does not fully explain the account of it in *DA* III.5 in two respects. First of all, viewed as a principle of knowledge, god is still viewed from the point of view of an intelligible *object* in its own right. This intelligible may, as immaterial, be the same as thinking. Nonetheless, it is not clear how it activates thinking in us, since as an intelligible it is still characterized as a potential object of thought. God as thinking, on the other hand, is picked out from the point of view of being active. Second, it is not clear—or as clear—why god as an intelligible should move us to think, whereas it is clear how *qua* thinking he moves us as an object of desire, as a being whose state is desirable. For as we know from *Nic. Eth.* X.7 contemplation is the most pleasant activity, and the life of active contemplation is the happiest.

One might still wonder why, given the desire to think actively and the ever-presence of the agent intellect, we do not always think. This, as 430a5–6 shows,⁵¹ is clearly a question Aristotle is sensitive to, though he never seems to give a direct answer.

Nic. Eth. tells us that contemplation is the most pleasant state, so if it was *entirely* up to those of us who know presumably we would always do it. One kind of answer of why we do not always contemplate comes in *Phys.* VIII.4 (255b3–4), where Aristotle suggests that various obstacles prevent us from always thinking, like a stone preventing a wineskin from floating by holding it down. Here he seems to have in mind various external factors, perhaps hunger or oncoming traffic or such like. There are practical exigencies which

⁴⁹ In *APo* I.2 Aristotle refers to the first principles of demonstrative knowledge both as the cause of the conclusions (71b23, b31–2) and as the cause of our knowledge itself (72a31–3). 'For you understand better if you know from the higher explanations; for you know from what is prior when you know from unexplainable explanations. Hence if you know better and best, that understanding too will be better and best' (*APo* I.9 76a19–22). 'He who chooses to know for the sake of knowing will choose most readily that which is most truly knowledge, and such is the knowledge of that which is most knowable; and the first principles and the causes are most knowable; for by reason of these, and from these, all other things are known, but these are not known by means of the things subordinate to them' (*Metaph.* I.2 982a32–b5, rev. Oxford transl.).

⁵⁰ We might think that this effect is just a matter of mental gymnastics, but if so it does not quite explain the notion of the exceedingly intelligible or how thinking differs from sight (there are clearly ways one can train one's eyes as a warm-up exercise). Rather the idea is that there are certain objects and thinking about these helps us think about other objects because the intelligibility of the latter somehow depends on the former, so having understood the former helps us understand the latter. The most obvious example of this relationship is the way principles explain other propositions within a system of knowledge.

⁵¹ 'The reason why it [theoretical knowledge of the immaterial intelligible] is not always thinking we must consider.'

require human beings to turn away from theoretical matters.⁵² In these cases, it will not be our desire to engage in theoretical thought. So, rational desire will not always favour contemplation over practice. More fundamentally, we also know from the *Nic. Eth.* (1175a4–5) that any human activity is incapable of being continuously sustained.⁵³ It is, I think, this kind of answer Aristotle has in mind in *DA* III.5 when he contrasts the agent and the patient intellect. The agent intellect is always contemplating what it knows, the patient intellect only sometimes, given the human condition. On this reading we also get the thematic link with the distinction Aristotle draws next between the agent intellect as immortal and eternal and the patient intellect as perishable. The patient intellect's inability to sustain contemplation is part of its general human limitations, compared to the agent intellect. What needs to be explained is the absence of contemplation in us given that all the conditions obtain. Here the answer is either obstacles peculiar to the thinker's situation, including contravening wishes or appetites, or more fundamentally the weakness of the human intellect.⁵⁴ What is not required here is, as it were, an external efficient cause to explain positively the onset of *particular* episodes of thinking. The visual analogy would be with light and colours present but us shutting our eyes or falling asleep. If light and colours were always present the explanation of why vision does not always happen would be clear: because we are incapable of always seeing. Meanwhile, the agent intellect, god's thinking, is a constant presence, which motivates us to think theoretically by its goodness and perfection.

Conclusion

Is Aristotle's account of the intellect consistent with his general view of the capacities of the soul as causes of change in living beings? The passive intellect, as passive, has a capacity to undergo change of the kind featured in *DA* II.5. On the other hand, both *DA* II.5 and *Phys.* VII.3 suggested that Aristotle saw the activity of thinking as a perfection or fulfilment which, while it might involve changes in various categories, did not qualify properly as a change. Aristotle's point in *PA* I.1 that the intellectual part (*to noētikon*) will not fall under the study of nature, as an inner principle of change, may reflect his sense, as in *Phys.* VII.3, that the activity of thinking falls into none of the recognized categories of change.⁵⁵ Moreover, in those cases of thinking that did seem

⁵² *Nic. Eth.* X.8 1178b33–5: 'But, being a man, one will also need external prosperity; for our nature is not self-sufficient for the purpose of contemplation, but our body also must be healthy and must have food and other attention' (transl. W. D. Ross).

⁵³ πάντα τὰ ἀνθρώπεια ἀδυνατεῖ συνεχῶς ἐνεργεῖν.

⁵⁴ Cf. *Metaph.* 993b9–11: ὡπερ γὰρ τὰ τῶν νυκτερίδων ὄμματα πρὸς τὸ φέγγος ἔχει τὸ μεθ' ἡμέραν, οὕτω καὶ τῆς ἡμετέρας ψυχῆς ὁ νοῦς πρὸς τὰ τῇ φύσει φανερώτατα πάντων.

⁵⁵ Here again is the passage (641b4–10) in Greek: 'Οὐκ ἔστι πάσα ἡ ψυχῆς κινήσεως ἀρχή, οὐδὲ τὰ μόρια ἅπαντα, ἀλλ' αὐξήσεως μὲν ὅπερ καὶ ἐν τοῖς φυτοῖς, ἀλλοιώσεως δὲ τὸ αἰσθητικόν, φορᾶς δ' ἑτερόν τι καὶ οὐ τὸ νοητικόν· ὑπάρχει γὰρ ἡ φορὰ καὶ ἐν ἑτέροις τῶν ζώων, διάνοια δ' οὐδενί. Δῆλον οὖν ὡς οὐ περὶ πάσης ψυχῆς λεκτέον· οὐδὲ γὰρ πάσα ψυχὴ φύσις, ἀλλὰ τι μόριον αὐτῆς ἐν ᾧ καὶ πλείω. Aristotle seems to be aligning the three parts of soul here to the different categories of change, finding none for the intellect.

to involve a necessary bodily affection, those that involved *phantasmata*, the relationship between the two was non-standard when compared to the account of anger in *DA* I.1; while in those cases where thinking did not involve *phantasmata*, namely thinking of immaterial intelligibles, the intellect was altogether independent of the body. In the last case, the intellect was formally at one with the agent intellect, which appeared to be god. The upshot of this analysis is that the account of human intellect involves elements of both form and matter but the relationship between them is non-standard in relation to the model presented in *DA* I.1. The agent intellect as immaterial falls outside the study of nature. It is separable from matter in the sense that it exists without matter and matter plays no role in the account of agent intellect. Agent intellect therefore belongs to first philosophy, by the standards of *DA* I.1, not natural philosophy.

Does the inclusion of the agent intellect show then that the *DA* is not essentially a work in natural philosophy? Not quite. Natural philosophy studies nature as an inner principle of change. But nature is not causally autonomous: ultimately natural change relies on an external first mover. Natural philosophy therefore needs to take into account a cause that is *of* nature but not *in* nature, as does Aristotle in *Phys.* VIII. In a similar way, he brings in the agent intellect in *DA* III.5 to explain the first unmoved mover of thinking. The opening of III.5 is no doubt meant to remind us of this viewpoint on nature. It should not surprise us that even in those activities in which we are most autonomous, in thinking which is up to us when we know, we are still ultimately dependent on an external mover. If we were not, we would not be like the rest of nature. In referring us on to the role of god, Aristotle's psychology is of a piece with his physics.

12

The Locomotive Capacity

Already in *DA* I.1 Aristotle warned us of the difficulty of determining which parts of the soul were different from which. Also in II.2 he indicated that it was difficult to tell in what sense different capacities counted as parts. Amongst the capacities he listed there was the locomotive capacity. We might have presumed that the locomotive capacity was a part of the soul, in the same way as the nutritive, perceptual, and intellectual capacities. For it is mentioned alongside these also on other occasions, and it serves, it seems, to differentiate a class of animals, just as perception differentiates animals from plants. As it is a differentia it should therefore also enjoy the definitional separateness of perception or the intellect.

However, it is precisely in the account of the locomotive capacity in *DA* III.9–10 that Aristotle's worries about determining which capacities are parts of the soul come to the fore. He thinks that the ability to move spatially poses a particular challenge for an analysis of the soul into parts. These are worries that arise particularly for a Platonic conception of parts, but Aristotle is clearly concerned that his own notion of parthood should not also fall prey to them.

Before we descend to the level of detail it may be helpful to give an overview of the argument of these two chapters. Aristotle starts by raising some puzzles about what it means to say that there are parts of the soul and how to identify them. He then goes on to discuss whether the locomotive capacity can be identified with any of the parts of soul that we have already dealt with, the nutritive (432b14–19), the perceptual (432b19–26), the intellectual (432b26–433a6), and finally, the desiring part (433a6–8). In III.10, Aristotle shows first that locomotion is caused by a combination of desire and intellect or imagination (433a9–30). He then returns briefly to a criticism of those Platonists who have approached the partition of the soul in the wrong way (433a31–b4), adding an analysis of the phenomenon of psychic conflict, which Plato had used in the *Republic* to divide the soul into three (433b5–10). He concludes that the principle that moves animals (433b10) is one in form but many in number. We can further distinguish factors in the motion of the animal (433b13–27), but the first mover is the object of desire as presented to the animal by intellect or desire (433b27–30). The conclusion is, then, that there is a moving part which draws on two capacities together, the desiderative and the intellectual or the imaginative, in the case of non-intellectual animals.

Let us now look at the detail of Aristotle's critique of Plato. Aristotle asks whether the locomotive capacity is a part of the soul or the soul in its entirety:

... we need to consider a) whether it is some one part of the soul which is separable either in magnitude,¹ or in account, or whether it is the soul in its entirety, and if it is a part, whether it is some peculiar part over and above the ones we are used to talking about and which have been mentioned, or whether it is one of these. But a difficulty immediately arises as to both the sense in which we should say that there are parts and how many we should say there are. For the parts appear to be indefinite (*apeira*)² in a way, and to be not only those which some claim when they make divisions, the rational, the spirited and the appetitive parts, while others divide the soul into the part that has reason and the irrational part. For according to the differences on account of which they separate these parts, also other parts will appear which are further removed from each other than these, the ones that we have spoken of just now, the nutritive, which belongs both to plants and all the animals, and the perceptual, which one cannot easily characterise as either irrational or rational. Moreover, the imaginative part, while it is different in being from all of them, a great difficulty pertains to saying which of these it is the same as and different from, if one lays down separate parts of the soul. And in addition to these, there is the desiring part, which would seem to be different from all of them both in account and in capacity (*dunamēi*). And it is surely absurd to tear this away from the rest (*diaspan*): for deliberation occurs in the rational part and appetite and spirit in the irrational part; and if the soul has three parts there will be desire in each. (*DA* 432a19–b7)

The passage sets out the puzzles that arise from certain ways of dividing the soul. Aristotle refers to a way in which the parts of the soul appear to be indefinite, and then provides a list of those parts. Aristotle clearly has in mind Plato or Platonists, as we can tell both from the reference to the division of the soul into three parts, the calculative, spirited, and desiderative, and from the mention of the division the soul into the rational and the irrational part, both known from the *Republic* and the *Timaeus*.³

Now the Platonists are said to divide the soul into parts according to certain ‘differences’, namely differences in account (*logos*) and capacity (*dunamis*). A natural way of understanding this joint specification is as differences in capacity according to *logos*. That is to say, the Platonist will posit two different parts for two capacities that differ from each another in account, or as one might say, in light of *DA* II.2 (413b29–31), where what it is for each of the capacities to be differs. This point seems well illustrated by the example of desiderative part (*to orektikon*) since Aristotle has already highlighted this as a capacity that is different in being but the same in number as the perceptual capacity. The Platonist, as Aristotle construes him, would have to posit two different parts on this basis.

Confirmation of this reading comes at 433a31–b4, where Aristotle restates the objection:

¹ Clearly ‘magnitude’ does not mean the same as ‘place’ in general. Yet place may be taken to be one kind of magnitude and I take it, with most commentators, that in this context Aristotle has the same in mind when he talks here of ‘separable in magnitude’ as what he meant in II.2 by ‘separable in place’.

² One could translate *apeira* as ‘infinite’. But ‘indefinite’ seems better in that the point seems to be that the predecessors’ way of dividing the soul offers no definite limit to how many one could thus divide rather than that the parts they divide will actually be infinitely many.

³ While Aristotle refers to some people dividing the soul into three and others into two, the *Timaeus* shows clearly that the two ways of dividing the soul may be taken as complementary rather than competing; see in particular *Timaeus* 69c–70b.

It is clear that this kind of capacity of the soul, so-called desire (*orexis*), causes motion. But the parts of the soul become exceedingly many (*pampolla*) for those who divide the parts of the soul if they divide and separate them according to capacities (*dunameis*): the nutritive, perceptual, intellectual, deliberative, and furthermore the desiderative. For these differ from each other more than the appetitive and spirited [differ from each other].⁴

Again Aristotle refers to the problem of the proliferation of parts and makes the comparison with the greater difference that obtains between the nutritive and perceptual souls as compared to the difference between the appetitive and spirited. And now he is explicit that the problem arises because these philosophers separate the parts according to (*kata*) capacities. We can easily see why the Platonist would be committed to exceedingly many parts on the criterion of difference of capacity in *account*, since for difference in account it is sufficient that an element in the *definiens* differs. This explains why seemingly overlapping capacities like the *orektikon* and the appetitive or the spirited would end up counting as separate *parts*, clearly a *reductio ad absurdum*.

Aristotle, then, is criticizing dividing the parts of the soul on the basis of capacities. This approach differs from his own, as we found it in *DA* II.2–3. For while the parts of soul were capacities, they were not parts simply by virtue of being different capacities. Rather the capacities that counted as parts were parts of the definition of the soul, specifically, the fundamental kind of souls of living beings. Such capacities were as elements of the definition also required to be not just definitionally different but separate. We can see how this criterion of being a part of soul will serve to severely limit the capacities that count as parts.

Now it is clear that Aristotle charges the Platonists with general taxonomical confusion: they seek to make do with only two or three parts but their criterion of parthood, difference in capacity, when applied generates many more parts. The confusion is aggravated by the fact that of the three capacities that they recognize as parts, at least the two, the appetitive and spirited, are much less different from each other than some of the capacities that they do not recognize as parts, including the ones that are much more different from each other, the nutritive and the perceptual and the intellectual, which therefore have a much better claim to be parts.

There are also difficulties specifically for our understanding of desire, the capacity that Aristotle ultimately wants to make responsible for locomotion. Using the Platonist criterion, desire too, as a capacity, becomes a separate part. So Aristotle mentions it, at 433b3, alongside the nutritive, the perceptual, the intellectual, and the deliberative parts, as yet (*eti*) another part the Platonists have to acknowledge. ‘Yet’ of course underscores the indefinite number of parts. But the passage also echoes the claim at 432b4–5 that the Platonists break off (*diaspan*) *orexis* from the other parts.⁵ That is to say, the Platonic analysis separates a part off from the others which properly belongs to them.

⁴ ὅτι μὲν οὖν ἡ τοιαύτη δύναμις κινεῖ τῆς ψυχῆς, ἡ καλουμένη ὄρεξις, φανερόν. τοῖς δὲ διαιροῦσι τὰ μέρη τῆς ψυχῆς, ἐὰν κατὰ τὰς δυνάμεις διαιρῶσι καὶ χωρίζωσι, πάμπολλα γίνεται, θρεπτικόν, αἰσθητικόν, νοητικόν, βουλευτικόν, ἔτι ὀρεκτικόν· ταῦτα γὰρ πλέον διαφέρει ἀλλήλων ἢ ἐπιθυμητικόν καὶ θυμικόν.

⁵ Adopting the reading of Simplicius against Themistius, see Rodier (1900) *ad loc.* The reading is also adopted by Corcilius (2008) 50–1. For *diaspan* referring to separating off an entity from that which it naturally belongs to, see Aristotle, *Rhet.* 1386a10.

Now it has been clear from early on in Book II that Aristotle understands desire as closely related to the cognitive capacities, perception, *phantasia*, and intellect. So in II.2, Aristotle claims that it follows necessarily from having perception that one has desire, since perception will include perception of pleasure and pain and it is necessary to desire the one and shun the other. Appetitive desire seems therefore to be a capacity that follows from having perception, and which cannot be explained without reference to perception. I suggested that this dependency on perception indicated that appetitive desire therefore does not count as a part in its own right.

In *DA* III.7 Aristotle again analyses desire and avoidance (*phugê*) as consequences of perceiving pleasure and pain.

To perceive then is like bare asserting or knowing; but when the object is pleasant or painful, the soul makes a quasi-affirmation or negation, and pursues or avoids the object. To feel pleasure or pain is to act with the perceptual mean towards what is good or bad as such. Both avoidance and appetite when actual are identical with this: the faculty of appetite and avoidance are not different, either from one another or from the faculty of sense-perception; but their being is different. (431a8–14, after revised Oxford transl. by Smith)

The activity of perceiving something as pleasant is the same in number as the activity of desiring it, while perceiving something as painful is the same activity as avoiding it. One might think of appetite here as the emotive side of the perception of pleasure, withdrawal or repulsion as the emotive aspect of the perception of pain. The emotive and cognitive are here two sides of the same coin, one in number. Aristotle's position does not seem unreasonable: the pain of being burnt and the urge to remove one's hand from the fire can readily be viewed as aspects or dimensions of the same experience, rather than two distinct activities, one following the other.⁶ On the basis of the numerical identity of the activities, Aristotle makes the further claim that the capacity for appetite is also the same in number as the perceptual, as is the faculty of avoidance, albeit they are all of course different in being, in that we would give different accounts of what it is to feel pleasure or pain and what it is to pursue or avoid these.⁷ The key thought for our purposes is that since feeling or otherwise perceiving something as painful involves at the same time being repulsed by it, we can see the ability to avoid pain as implied by the ability to perceive pain.

Both the abilities to desire and to flee are the same as the perceptual capacity though different, as he says, in being. This claim anticipates the statement in III.9 that desire is

⁶ This is of course a mere sketch of a position. For in-depth clarification and defence of this kind of reading see Charles (2006).

⁷ One might object that the perception or thought has to be a distinct activity from the desire since one is the cause of the other (cf. *MA* 7 701a35–6, *Metaph.* A 7, 1072a29–b4). However, for Aristotle, saying that the two activities are one in number does not undermine the claim that the perception of the pleasure is the cause of the appetite, any more than the claim that the activity of the sense-object and that of the sense-faculty are one in number but two in being undermines the claim that the one is the cause of the other (*DA* III.2 425b26–426a26). Recall also the point from Chapter 4 that active potentialities are realized together with passive potentialities. See further Charles (2006) 37–8 for replies to this objection.

different in being from the other capacities, but it also underscores how close appetitive desire is as a function to perception. The upshot is clear: appetitive desire while different in definition from perception is also definitionally dependent on perception: you simply cannot say what it is to experience appetitive desire without make reference to perception, since what characterizes this desire as appetitive is its responsiveness to a certain perceptual experience, pleasure. Hence appetitive desire can be said to belong to the perceptual part.

Much the same is true of the relationship between rational desire, *boulêsis*, and practical reason. In *DA* III.7 431a14–17 Aristotle goes on to make the same kind of point about thinking that he has just made about perception: ‘To the thinking soul images serve as if they were contents of perception (and when it asserts or denies them to be good or bad it avoids or pursues them).’ The parallel with perception suggests that we take intellect’s assertion of something as good and its pursuit of it as two aspects of the same activity of the intellect, rather than two distinct activities, one leading to the other. We can think of wishing as the emotive dimension of thinking that it would be good that something come about. Correspondingly, we can, in analogy with the perceptual case,⁸ take both to be activities of the same capacity, that of practical intellect.

Boulêsis arises out of practical reason’s assent to something as good, much as *epithumia* arises out of the perception or *phantasia* of something as pleasant. Rational desire is not a separate part or an aspect of a separate part from the intellect, but a feature of the soul we have by virtue of being rational. So when Aristotle says that desire is the principle of practical reason (433a15–16) and again more precisely (433a19–20) that what is desired (*to orekton*) is the principle of reason (*dianoia*), he means to say that the rationally determined good is the proper object of practical reason and makes us desire it and move towards it. We should not think then that desire in these cases is external to practical reason, and that reason merely facilitates the enactment of what we already independently desire.⁹ Rather it is an aspect of reason to desire what is rationally determined as good, and therefore it is right and proper to think of rational desire as belonging to the rational part of the soul.

Consider also Aristotle’s analysis at 433b5–10 of the sort of conflict Plato used in *Republic* IV to separate the parts of the soul: the conflict between reason and appetitive desire. Aristotle understands the conflict between an appetitive desire for some currently available pleasure and the rational judgement that one should refrain from this pleasure in terms of the difference between what appears good to us by virtue of reason and what appears so because of *phantasia*: by virtue of reason we have a conception of the good over time, but *phantasia* presents what is pleasant here and now as if it was good without qualification. What is noteworthy is that it is appearances of what is good which we have by virtue of *logos* and *phantasia* which generate the opposed desires and

⁸ See again Charles (2006) for a full treatment of the analogy.

⁹ See Cooper (1989) 30–1.

motivate us. The opposite desires are in this way embedded in the two different cognitive parts, the intellectual and the perceptual.

On this reading, Aristotle's response to his own initial question: 'if the locomotive capacity in some sense is a part of the soul is it the same as one of the parts or a new part?' is to affirm the first option. The difficulties that III.9 finds with identifying the locomotive capacity either with perception or reason have to be dealt with by more fully describing perception and reason so that they can accommodate desire. The mistake made by the Platonists is, then, too hive off *orexis* from the parts of soul that we have already recognized, in particular perception and intellect. They are forced to do so because they use difference in capacity to identify parts. But while *orexis* as a capacity is different in account both in its appetitive and rational versions from either perception or intellect, it is not different in number from either of these. Rather they belong to these capacities as aspects further to those functions which, as we have seen, properly define them.

I said at the outset of this section that we would expect locomotion to be a part of the soul in its own right, because it differentiates certain animals. Now the account I have developed accommodates this expectation as follows. Appetitive desire is responsible for moving us, but this is a further specification of the perceptual part. It also seems to require *phantasia*, which is not given to all animals. There is therefore room for locomotion to work as a further differentia within the class of living beings with perception. However, *phantasia*, as we have seen, is not itself a part but a further aspect of the perceptual part. This taxonomy crucially differs from the Platonic whereby *orexis* was hived off (*diaspan*) from the perceptual part, and made a separate part without essential determination by perception or reason. From Aristotle's viewpoint this gets the taxonomy completely upside down: *epithumia* is not a part which somehow has perception, rather it is an aspect of the perceptual part.

Moving the Body

One problem one might have with this account, and the account as an interpretation of Aristotle, is that it is unclear how a desire for something as pleasant or as good will translate into locomotion. We may think that this is particularly unclear given the analysis of desire as a function of perception or thought, that is, as a function of essentially cognitive capacities. Aristotle of course warned us in *DA* III.9 against thinking that either cognition or desire on its own was sufficient to trigger locomotion: those who knew how to act might fail to do so for want of desire and those with self-control might not to what they desired, but what their intellect told them. These kinds of case could be understood as cases where rational and appetitive desires do not line up and one kind of desire prevails over the other, along the lines explained by Aristotle at 433b5–10. The desire that leads to locomotion needs then to be understood as the prevailing desire in those cases where there are conflicting motivations. However, this account still seems to leave an explanatory gap between the formation of the prevailing

desire and the execution, not as a matter of motivation—we are assuming that one is now as fully motivated to move as possible—but as a matter of execution. A paraplegic, we might imagine, could be fully motivated to reach for the cup of water, but fail to do so, because he cannot move his limbs. It seems fair to raise this point in an account of locomotion, since what needs to be explained after all is not just how we are motivated to move but how we actually manage to move ourselves.

Aristotle is well aware of this point, and the way he deals with it is instructive, I think, of his approach to the capacities of the soul in the *DA*. What moves us in locomotion is a complex of factors. The object of desire (*to orekton*) is itself unmoved but moves desire when represented by intellect or *phantasia* as something good or pleasant. As we have seen, the perceptual or intellectual representation of the object as good coincides with the formation of a desire for it. Desire in so being moved moves the animal. We might say, then, that what moves us is two-fold: the object of desire which only moves and the desire which both moves and is moved. However, the way desire moves the animal allows further analysis:

The instrument by which desire moves, this is already something bodily, which is why it should be considered amongst the functions common to body and soul. But for now, to sum up: what moves in the way of an instrument is found where beginning and end are the same – just as a joint. For here the convex and the concave are the end and the beginning (which is why the one is at rest and the other is moved), being different in account but the inseparable in magnitude. For all things are moved by pushing and pulling, which is why it is necessary, just as in a circle, for something to be at rest and for the movement to begin from there. (433b18–27)

Aristotle introduces the instrument in a way that suggests that the discussion of it belongs elsewhere, in the discussion of the works common to body and soul. He does just enough here, by way of summary, to show how an instrument might do the job that desire requires. So the instrument of desire reflects the role of desire as a moved mover. The instrument is like a joint in which the moving part and the moved part are to be found in the same place: as an end it is at rest and as a beginning it is in motion. The *MA* will tell us much more about how this instrument works, and will identify it as *pneuma*. However, one thing that this sketchy account of the instrument establishes is that desire does not move us simply by virtue of the experience we have of desiring something, but by virtue of a bodily movement that happens, somehow, as desire is moved by the object of desire. Aristotle is aware, then, of the need to show how the account of desire as a certain psychic change matches up with an account of bodily movements, where the account of the bodily side is an integral part of the account of locomotion.

What is striking, however, is how Aristotle seems to think that the account of the bodily organ of desire properly belongs to another context, in which functions common to body and soul are to be dealt with. There are two alternative messages one might draw from this observation. One is that there is more to be said about the bodily aspect of locomotion, but enough has been said for now to define the capacity

of locomotion. Another is that the capacity for locomotion cannot be fully accounted for in the *DA*, but belongs to other works, notably the *MA*.

Before trying to choose between these options, it may be helpful to compare the instrument of locomotion with the instruments of perception. When we perceive there is a change in the body. How to characterize this change is not at issue here; what I wish to underline is that the change happens at the point when the sense-object acts on the sense-faculty, that is, insofar as the activity of perception takes place. The organ of perception is then involved in any bodily changes insofar as the sense-faculty is moved, insofar as it undergoes the change we understand as defining perception. We might say that the change happens insofar as the principle (*arkhê*) of perception does its job. Now contrast the instrument of locomotion: before the animal moves itself it will represent to itself an object as pleasant or good. This may involve a change in the body, but if so it is not the bodily change that involves the instrument of locomotion, as such, but a change in the sensory capacity. Nor yet does desire's being moved by the object of desire call for the introduction of the instrument, and perhaps this motion too can be understood as a motion in the sensory part. Rather what makes Aristotle talk about the instrument is desire's *moving* us (434b19, 21). If we take the principle (*arkhê*) of locomotion, as Aristotle puts it, to be the object of desire, then there is no role yet for the instrument of locomotion as such, nor yet when we are thinking of desire simply as a response to the object of desire. Rather it is only when we start thinking of a desire that has so arisen as moving us that the instrument is brought in. Compared with perception, the instrument is introduced not at the point where the soul works as a causal principle or origin of locomotion, but at the point of the output of the soul's work, downstream, as it were.

This point reflects the sense that much of what Aristotle says about locomotion in *DA* III.9–10 is about what it takes psychologically to motivate an animal sufficiently to move, rather than what it takes for an animal to translate such a motivation into appropriate motion. The focus on the former aspect makes good sense in the context of the *DA*, which is after all about the capacities of the *soul* as the principles (*arkhai*) of life behaviours. Recall that Aristotle's brief was to consider the soul, how it caused motion (*kinoun*, 432a18–19). The fact that the involvement of the bodily instrument of locomotion arises causally downstream from the activity of this principle, that is of the intellectual or perceptual capacity, creates the impression that the bodily instrument is tagged on to the account of the soul as the cause of locomotion, in a way one could not say that the account of why the organ of vision, say, is required was tagged on to the account of the capacity to see. From the point of view, however, of accounting for the way the animal moves itself, it is clear that the bodily instrument is quite crucial.

There seems then to be a certain ambiguity in what it means to account for locomotion. Insofar as the aim is to show the soul as a principle of animal locomotion, we may think that the *DA* has done the job, but insofar as we aim for an account of animal locomotion, including how the body moves given the input of the soul, we may think that much is left out, which will be filled in by the *MA*.

In view of these observations, how might one try to understand the reference to ‘functions common to body and soul’? At first glance, it is puzzling why such functions should be the preserve of a work other than the *DA*, since, as we saw (Chapter 8), Aristotle in the first chapter of Book 1 said that the majority of the affections of the soul were ‘not without’ (*outhen aneu*, 403a6) or ‘with’ (*meta*, 403a16) the body, and that they should be explained by us as natural philosophers as forms in matter. So if we have been explaining affections such as perception as forms in matter, why is it suddenly no longer the business of the *DA* to explain ‘functions common to body and soul’?

The phrase ‘function common to body and soul’ could mean several things.¹⁰ It could mean that the body undergoes a function which the soul also undergoes. In this sense, one might talk of you and me undergoing a common experience when we both independently experience the joy of fatherhood. Second, it could mean that the body and the soul together perform a function. Similarly, my wife and I together experience the joy of parenthood. When Aristotle employs the phrase in the *Sens.*, he seems to have the second notion in mind:

It is clear that all the [attributes] mentioned are common to the soul and the body. For they all either occur with (*meta*) perception, or through (*dia*) perception, and some happen to be affections (*pathê*) of perception, others states (*hexeis*), some are protections (*phulakai*) or preservations (*sôtêriai*) [of perception], and yet others destructions (*phthorai*) and privations (*sterêseis*) [of perception]. That perception happens to the soul through the body is clear both with and without argument. (436b1–8)

The phrase ‘common to soul and body’ implies here that the various activities of the soul depend on the body, because they depend in various ways on perception, and perception ‘happens through the body’. There seems then to be a dependency of the soul in these affections on a bodily process of some sort, which justifies the claim that they are common to body and soul.

In another occurrence of the phrase (*PA* I.3 643a35–b3), Aristotle says that one should not divide, at least in the context of dichotomous division, by using functions common to the body and soul. His examples are walking and flying. His point is that there are cases of the same species, like ants, which are either walking or flying, and so if one uses walking and flying as differentiae, the same species will end up on opposites sides of the division.

Now the introduction to *Sens.* clearly marks a distinction between, on the one hand, what is true of the soul as such and therefore what is true of animals in terms of having such a soul and, on the other, what is true of animals by virtue of the affections common to body and soul. It is clear that this distinction is not necessarily exclusive in terms of its extension, since perception falls on both sides. So we are on the one hand referred back to the *DA* for what perception is and why it belongs to animals, while, on

¹⁰ See Lennox (2001) 164. Lennox also notes a significant third understanding, ‘the functions of body and soul that are common to an animal’, which, however, seems less relevant to the context of *DA* III.10.

the other hand, Aristotle mentions perception as an affection common to body and soul, and indeed the affection common to body and soul by virtue of which other affections that make reference to perception may be said to be common to body and soul. Nonetheless we can see the distinction in the way perception is dealt with in the two cases: as we saw, the *DA* offers a definition of what perceiving and the capacity to perceive are in the context of defining what the soul is, while the *PN* addresses affections that animals may have by virtue of having perception, but are not defining of perception as such. But if it is not by virtue of having perception as such or of some other capacity that defines their soul that animals have these perceptual affections, then it must be by virtue of some other facts about them. Some of these could be facts about their souls as the specific kinds of animals they are, which is why we need to bring in the comparison between different kinds of animals. But others are common to all living beings or animals and in these cases, such as sleeping and waking, where all animals have the affection, it seems reasonable to say they may have these affections by virtue also of their bodies, since the animals do not have them simply by virtue of perception. While, then, perception is an affection common to body and soul, what is true of perception as such is something we can explain in terms of the soul, while other things that are true of perception may be true also because perception is a bodily state. Again one should be clear, in light of *DA* I.1, that what is true of perception as such may, indeed should, include facts about the body, since perception as such entails by hypothetical necessity certain material changes. What is in view, then, when we talk of treating affections as common to body and soul would be explaining further features of, or facts about, the affections other than those that simply follow, about the soul or the body, from defining the psychological affection in a certain way. Investigating functions as common to body and soul is an approach to psychological phenomena which, in this way, goes beyond that of the *DA*, though as in the case of perception the phenomena studied may overlap.

Looking at something as an affection common to body and soul seems appropriate, then, in those cases where we are investigating features of the affection that are not true simply in terms of the soul. We may plausibly see the *PA* passage as also relying on such a contrast. For if it is the same animal species, the ant say, which in some cases has wings and in others not, then it cannot be by virtue of ant soul that these differ, for insofar as ant soul is the form of ant, the soul should be the same for all ants. This does not, of course, mean that ant soul does not play a role in explaining why some ants fly and others do not, but it cannot be ant soul itself that explains the difference. That is why we need to bring in the body, explaining flying or walking in terms of both the body and the soul.

Now to return to locomotion, the distinction between what is true of animals in terms of their soul and what is true of them in terms of the community of body and soul seems appropriate given that the cause of locomotion has been identified as an affection of the soul, the desire for a certain object presented to us by intellect or *phantasia*. The cause of locomotion in this sense can be described in terms of what is true of the animal

by virtue of its soul. I repeat that this does not mean that the cause of the soul does not have a material basis, nor that there are not material processes happening in the desiring animal, any more than to say that perception has been defined as a psychological affection means that it does not have a necessary bodily aspect. What it rather means is that insofar as there are material processes going on while we represent and respond to an object as desirable these are happening by virtue of the soul of the desiring subject. However, when we consider the account of how desire moves the body, it seems clear that we can only understand this by reference to further facts about the body. So the explanation which Aristotle offers in summary of a joint which is convex is not a psychological explanation as such, but belongs to mechanics or mathematics in a way that is entirely neutral as to whether the subject is animate or not. So in *MA* 1–4 Aristotle embeds the account of how an animal moves itself within a greater account of how motion happens in the universe in a context that makes no reference to soul. As in *DA* III.10 (433b18–27, just quoted), he refers to a mathematical model of how the same joint is divided into two, allowing it to move and be moved at the same time (*MA* 698a18–b8). He is explicit that an inanimate object such as a stick can exhibit the same relation of being an unmoved mover, as the hand that holds it (702b2–3).¹¹ The implication seems to be that in order to understand the notion of a moved mover, the role played by the instrument of locomotion in *DA* III.10, we need to understand how the body works in terms of a wider mechanical phenomenon that does not require having soul. It is clear therefore that the explanation of self-motion at the point where we introduce the bodily instrument requires bringing in facts about the body that are not facts that apply in terms of the body being the matter of the soul, let alone the matter of the capacity of desire.¹²

The account of locomotion shows the limitations of the *DA*'s approach to the capacities of the soul. Aristotle approaches them as the causes of life behaviours, specifically as their formal, final, and efficient causes. In some cases, such as perception, this account has immediate consequences for the material realization. We can see how a capacity to be affected by colour must be realized in transparent matter, given that only the transparent provides the ability to take on the colour of something. The implication of certain kind of material account of perception follows immediately from the formal account. However, in the case of locomotion the account of the cause of locomotion was in the first instance the representation of an object as good or pleasant and the concurrent response to it as desirable. Neither has immediate material consequences specific to locomotion (though they may have material implications as perception or desire). Rather to understand how desire moves the body we need to look elsewhere for the material account, to an account of the material processes which

¹¹ Cf. also Aristotle's use of the example of a mechanical puppet (701b2–10).

¹² So, for reasons different from those offered by Corcilius (2008) 247, I agree that this instrument should not be treated as the organ of desire, if this means placing it on a par with the organ, say, of vision.

does not draw its explanatory principles directly from the psychology of desire, but from general mechanical principles operative in nature at large. If then we are interested in the capacity for locomotion in the full sense of the capacity that explains why the body moves when we have certain desires, we do not get this in the *DA*. Locomotion is not the only such psychological phenomenon, as we shall see in the next chapter.

13

The Descent from Definition: The Capacities of the Soul Applied

The *DA* structures the account of the soul around those capacities that enter into the definition of soul at the highest level of generality: nutrition, perception, and the intellect. These were capacities that were explanatorily fundamental to the other behaviours of living beings as living. Aristotle's suggestion was that once we had defined those attributes that were essential to the soul, we could then explain further features of living beings by virtue of those attributes.

The opening of the *Sens.* marks the shift from the definition of the capacities to their application:

Since definitions have been made concerning the soul in itself and about each of its capacities in its turn (*kata morion autês*), the next stage is to inquire about animals and all the living beings what their specific and what their common activities (*praxeis*) are.¹

Aristotle summarizes the results of the *DA* in a way that brings out four contrasts with 'the next stage':

(i) He says that the *DA* defined 'the soul in itself'. This contrasts with the inquiry into living beings, which is 'the next stage'. While clearly many of the things that are true of living beings hold by virtue of what is true of the soul itself, the explanatory object is still different. So while it will be true of a certain animal that it perceives, and therefore it will be true of it that it perceives in the way defined by the *DA*, it may also perceive in a particular way which may or may not contrast with the way other animals perceive. To explain how a specific animal perceives is therefore not the same as explaining what perception itself is.

(ii) Aristotle mentions the definition of the capacities alongside that of the soul itself. As we have seen, these two definitions are closely related in that Aristotle defines the soul by defining its basic capacities. He adds '*kata morion*': this may simply be a stylistic variant for *kata meros*, meaning 'in turn', as in my translation above. However, *kata morion* could also be taken as a reference to the role of the capacities as parts in the

¹ *Sens.* 436a1–5: Ἐπεὶ δὲ περὶ ψυχῆς καθ' αὐτὴν διώρισται πρότερον καὶ περὶ τῶν δυνάμεων ἐκάστης κατὰ μέρος αὐτῆς, ἐχόμενόν ἐστι ποιήσασθαι τὴν ἐπίσκεψιν περὶ τῶν ζώων καὶ τῶν ζῶν ἐχόντων πάντων, τίνες εἰσὶν ἴδιαι καὶ τίνες κοιναὶ πράξεις αὐτῶν.

definition of the soul.² If so, the line reads like a confirmation of the reading of psychic parthood I offered in Chapter 3. In any case, Aristotle is clearly indicating that in the *DA* the capacities were defined in the context of defining the soul itself. As we move to accounting for living beings this is a constraint that is lifted.

(iii) Indeed, the further contrast between capacities and activities (*praxeis*) confirms that we are no longer dealing with activities in the context of defining the soul.³ As I argued in Chapter 1, one reason why the account of the soul goes with an account of its capacities is that what it is to have a soul, and hence what it is to be alive, is not to be understood at the level of being active but at the level of being in capacity, namely at the level of so-called second potentiality. When referring to the next phase as the study of the *activities* of living beings, we may take it, then, that Aristotle is no longer particularly concerned with capacities as such. This of course does not mean that the activities to be considered are not activities of capacities which we may have come across in the *DA*: clearly perception will be play a prominent role not just in the *Sens.* itself but also in the small treatises that follow, commonly referred to as the *Parva Naturalia* (*PN*). Nor does it mean by contrast that we did not consider activities in the *DA*: again clearly we did consider those activities that defined the capacities. However, the move from capacities of the soul to activities does suggest that we will not be considering those activities from the point of view of defining these capacities, and that we are no longer considering them as activities that define capacities that contribute to the definition of the soul itself.

(iv) Finally, Aristotle presents, as part of the next phase, questions of comparative biology. The concern of the *DA* was with those basic capacities that defined the souls of living beings, for example, perception for animal soul. Therefore, there was no reason to consider those activities of perception whereby the souls of various kinds of animal differed, nor was there any reason to investigate the different kinds of activities which might be common to all living beings but were not such as to define their souls. The lifting of the *DA*'s definitional constraint therefore also allows us to look more widely at activities whereby living beings differ where the difference concerns the operation of those capacities that define them as the kinds of living beings they are. Aristotle says more in the next lines about the kinds of activities to be studied now:

Let's take what was said about the soul as established, and let's speak about what remains and let's speak first about the things that come first. It is clear that the greatest [attributes],⁴ both those that

² So the Modern Greek translation of Sotirakis and Eustathiou (n.d.). What may count in favour of this reading is the fact *kata morion* is followed by *autés*, which is not required by the other reading, and could be taken as a partitive genitive, referring to the soul.

³ Cf. Alexander of Aphrodisias (*ad loc.*): 'He [Aristotle] has used the word "action", *praxis*, here, just as he is accustomed to elsewhere, as a more common alternative to activity, *energeia*.' Alexander may have in mind *DA* II.4 415a16–20 where Aristotle says that 'the actualities and actions (*energeiai kai praxeis*) are prior in account (*kata ton logon*) to the potentialities (*dunameis*)' (414a18–20).

⁴ I supply 'attributes' as a complement for 'greatest' and again at 4362 with *πάντα τὰ λεχθέντα* without implying any categorical restrictions (though clearly *πράξεις* should be taken as included). 'Affections' is an

are common and those that are specific to animals, are common to soul and body, such as sense-perception, memory, anger, appetite and generally desire, as well as pleasure and pain. For these belong to almost all animals. But in addition to these some are common to all that participate in life, whilst others belong only to some of the animals. The greatest of these happen to form four pairs, namely waking and sleeping, youth and old age, inhalation and exhalation, and life and death. We need to consider, concerning these, what each of them is and by what causes they happen. It belongs to the natural philosopher to know the first causes of health and disease. For neither health nor disease can occur in those that are deprived of life. That is why most of the natural philosophers complete their inquiry with medical principles and those doctors who pursue their art more philosophically begin their studies with the principles of natural philosophy. It is clear that all the [attributes] mentioned are common to the soul and the body. For they all either occur with (*meta*) perception, or through (*dia*) perception, and some happen to be affections (*pathe*) of perception, others states (*hexeis*), some are protections (*phulakai*) or preservations (*sôtêriai*) [of perception], and yet others destructions (*phthorai*) and privations (*sterêseis*) [of perception]. That perception happens to the soul through the body is clear both with and without argument. But we spoke earlier in the *De Anima* about the sense and perceiving, what it is and why this affection happens to animals. (436a1–b10)

If we consider the subject matter of the theses forming the *PN*: memory and recollection, sleep, dreams (and divination through dreams), longevity, youth and old age, life and death, and respiration, none of these are activities that define faculties of the sort that will enter into the definitions of any of the major kinds of soul or life forms in the *DA*. That is of course not to say that they do not relate importantly to these kinds of soul. So, both dreams and memory are affections or activities of the perceptual faculty. However, they are not activities that help *define* the perceptual faculty. And that is why the consideration of these activities belongs to a new stage of Aristotle's psychology, the stage initiated by the *Sens*. Nor should saying that the *Sens*. introduces the study of affections that do not define the soul be taken to mean that Aristotle will not offer definitions of *these* activities. On the contrary, he clearly announces at 436a16–17 that we should consider what the conjunctions (*suzugiai*) waking and sleeping, youth and old age, inspiration and expiration, life and death each are and why they happen. However, these affections do not play a part in the definition of soul itself or any of its main types. I take it that is why none of them were accounted for in the *DA*.

Now Aristotle uses perception as part of his strategy to show that these affections are indeed common to the body and soul. What about perception itself though? Perception was defined in the *DA*. But if the *Sens*. is required to complete Aristotle's account of perception, does that not show that the *DA*'s definitions of the perceptual faculties were somehow incomplete? No. Again we should distinguish between what Aristotle wants to say about perceptual activities in the context of defining the faculty itself and what he wants to say about perceptual activities more widely. So he says 'But we spoke

alternative term which I will use elsewhere, but I avoid using it here to prevent possible confusion with *πάθη* at 436b4, which, in its contrast with *εἵξεις*, seems to carry a more specific sense.

earlier in the *DA* about the sense (*aisthêsis*) and perceiving (*aisthanesthai*), what it is (*ti estin*) and why this affection happens to animals'. Aristotle is, in effect, saying to his audience here: 'Don't ask me now what perception itself is. In the *DA*, I defined the faculty and the actuality of perception. I also explained why perception belongs to animals (cf. *DA* III.12–13). What we shall now deal with are affections that the animals have as a consequence of having perception. These are affections that arise with or through perception, or are in some way states or affections of perception. So in the context of accounting for these affections I will be talking also about perception, but whatever I will be saying will not alter the account I gave in the *DA* of what perception is; rather that account will be assumed and used as the basis for my accounts of the other affections.'

Read in this way the passage confirms that Aristotle wishes to distinguish the inquiry to be conducted in the *Sens.* and subsequent works into activities involving perception from the inquiry that provided the definition of the faculty and activity of perception in the *DA*.

Aristotle announces an interest in features of living beings that are 'common to body and soul', and seeks to show the range of these affections by showing their dependence on perception. We last came across this phrase in *DA* III.10 when Aristotle said, in discussing what moves us, that 'the instrument by which desire moves, this is already something bodily, which is why we need to consider it amongst the functions common to body and soul' (433b19–21). In my discussion of this phrase I argued, partly with reference to *Sens.* 1, that the phrase indicated affections of the body which could not be explained directly by extension of the soul's affections. In referring to features common to the body and soul we are picking out affections whose corporeal aspect brings with it some explanatory independence from the formal psychological account.

Aristotle thinks that their dependence on perception shows the other features also to be common to body and soul. It is clear from the range of features and the range of relations indicated by the prepositions 'through' and 'with' that he thinks that this dependency can take a variety of forms. However, scholars have sometimes thought that the claim that perception itself happens 'through (*dia*) the body' (*Sens.* 436b6–7) is in conflict with the view of the *DA* that perception is the activity or fulfilment of the body.⁵ Given the Platonic pedigree of such talk, they have the impression that it represents an earlier pre-hylomorphic thinking about the soul. Socrates famously argued at *Theaetetus* 184c that the sense-organs were that 'through which', rather than that 'with which', we perceived, whereas the soul itself was that with which we perceived. This preference for thinking that the soul perceives through the body is reflected in other Platonic works. So at *Timaeus* 43c4–5 Timaeus refers to perception as a motion that reaches the soul 'through the body' (cf. also 45d2, 64b3–6). The implication of this idiom for Plato seems to be that the body is a conduit for what the

⁵ Cf. Menn (2002) 89–90.

soul perceives rather than an integral part or aspect of that which perceives. It would clearly be odd if Aristotle thought of the relationship between perception and the body in a way that conflicted with the *DA*, or parts of it (*DA* II.1–5) in the same breath as he refers back to the *DA*'s account of perception and its causes (436b8–10). However, we can explain the Platonic ring to the phrase 'through the body' without conflict with Aristotle's hylomorphism: he too would accept that there is a way in which sense impressions are mediated through the sense-organs to the central *sensorium*. The activity of the external sense-organs is communicated to the central sense-organ through passages (*poroi*) in the body.⁶ Nonetheless, we may say that the expression by allowing for a Platonic view is significant in two ways. One is that it keeps a door open for a Platonic conception of the relationship between soul and body in perception. Aristotle's point I take to be this: even if you are a Platonist and therefore the sort of person who is most likely to think that the soul undergoes a considerable number of important affections on its own apart from the body, you will accept that perception is an affection common to body and soul.⁷ For even Plato speaks of perception happening together with the body. Indeed, it is he who may be said not only to have introduced the notion of affections 'common to body and soul' in the *Philebus* (34a3–b8) but to have done so in the particular context of perception. Aristotle's phrasing reminds us of this Platonic background. It thereby underlines how Aristotle takes the claim that perception is common to body and soul to be uncontentious: you do not have to accept my hylomorphic account to accept the claim; indeed be a Platonist, and you will still accept it. So, in this context, it is not important for Aristotle what story you want to tell of the relationship between the body and the soul in perception; what is important is that you have some story according to which perception is common to body and soul, be it a Platonic one or an Aristotelian one.

However, there is also another aspect of the phrase 'through the body' which makes its appropriation from Plato peculiarly suited to Aristotle's conception of features 'common to body and soul'. On the Platonic conception of perception, the body undergoes certain changes before the soul is altered. So in the *Timaeus* (64b) the bodily changes are communicated round the body before they reach the intellect.⁸ From an Aristotelian perspective it would be wrong to say, and most clearly so in the case of special perception, that the changes happen in the sense-organs prior to the act of

⁶ Cf., for example, Aristotle's stipulation of passages (*poroi*) that extend from the proper sense-organs to the heart in *GA* II.6 743b35–744a5. The lack of vision caused by severing some of the ophthalmic *poroi* behind the eye suggests that these (if not all the *poroi* connected to the eye) have some mediating function in vision, cf. *Sens.* 438b8–16. For a full discussion of the complex evidence see Lloyd (1978), especially at 220, and Johansen (1997) 67–95.

⁷ Note the similar phrasing at *Somm.* 454a7–11: ἐπεὶ δὲ οὔτε τῆς ψυχῆς ἴδιον τὸ αἰσθάνεσθαι οὔτε τοῦ σώματος (οὐ γὰρ ἡ δύναμις, τούτου καὶ ἡ ἐνέργεια· ἡ δὲ λεγομένη αἴσθησις ὡς ἐνέργεια κίνησις τις διὰ τοῦ σώματος τῆς ψυχῆς ἐστὶ), φανερόν ὡς οὔτε τῆς ψυχῆς τὸ πάθος ἴδιον, οὐτ' ἀψυχον σῶμα δυνατόν αἰσθάνεσθαι. As in *Sens.* 1, so in this passage the dialectical appeal of Aristotle's claim that perception is common to body and soul is widened by a phrasing acceptable to a Platonist.

⁸ Alternatively, 'consciousness', to *phronimon*, cf. O'Brien (1997).

perception. Although special perception will not happen unless the sense-organs are integrated with each other and the common sense-organ, *per se* perception can still be said to be a change in and of the special sense-organs insofar as it is the special senses as such that are causally responsible for special perception. (Similarly, we might say that the Foreign Office is responsible for promoting the UK's interests abroad, though such a function exists only as part of the whole governmental administration.) However, what Aristotle gains by using the Platonic phraseology is to highlight a degree of independence of the body in perception considered as an affection common to body and soul. On the reading I proposed 'common to body and soul' was used particularly of embodied affections of the soul insofar as the body provided explanatory information that was not hypothetically necessary given the formal psychological definition. Other scholars have taken the expression to indicate a degree of dualism, again in tension with the view of perception as the activity and fulfilment of the sense-organs. The way in which this is right, on my reading, is just that the body has a degree of explanatory independence which it does not have when we consider the body simply as a potentiality for the activity of the senses. The Platonic phrasing is appropriate in this context: it suggests that something happens to the body before something happens to the soul, but the way to understand this 'before' in Aristotle is that there is a certain way one should look at the body independently of what happens in the soul in order to understand these affections. But this is of course perfectly compatible with there being no such explanatory 'dualism' when we consider the relationship between the affection that defines perception as such and its bodily aspect.

The lifting of the definitional constraint allows Aristotle to address a range of psychological affections that cannot be explained directly in terms of perception as defined in the *DA*. Their accounts will take up much of the *PN*. But the lifting of the definitional constraint also allows him a different perspective on perception itself. As we have seen, *Sens.* 1 presents the next topic after the *DA* as the activities of living beings common to body and soul, as they are common or specific to different kinds of living being. Yet the remainder of the *Sens.* has as its explicit subject matter the sense-organs and the sense-objects. Indeed, the conclusion of the *Sens.* at 449b1–3 says simply 'it has been said concerning the sense-organs and the sense-objects in what way they are disposed generally or in relation to each sense-organ'. It is hard to recognize the introduction to the *Sens.* in these lines. We can see a motivation for tackling the two subjects of the sense-organs and the sense-objects together after the *DA*: for if the *DA* talked about the sense-objects only insofar as they helped define the potentialities of perception and if it talked about the sense-organs only insofar as they provided potentialities of perception, then we can understand why one might be curious to know more both about the sense-objects and about the sense-organs themselves, that is to say apart from their role in defining the sense-faculties.

However, if we accept this as a plausible motivation for tackling the sense-organs and the sense-objects together in the work following the *DA*, then it becomes all the more curious why Aristotle introduces this work in *Sens.* 1 as one concerned with the

various activities of living beings and with the distribution of these activities across living beings.⁹ I want therefore to consider the discussions of the sense-organs and sense-objects in the rest of the *Sens.* with a view to showing the relevance of these discussions to the inquiry into the activities of living beings and their distribution. The answer I shall suggest is that the accounts of the sense-organs and the sense-objects provide Aristotle with resources for accounting for the non-defining activities of living beings and differences and similarities amongst these activities.¹⁰

I have suggested that *Sens.* 1 sets up the inquiry into activities of living beings that rely on but do not define the main faculties of the soul. I have further suggested that the lifting in the *Sens.* of what I have called 'the definitional constraint' (activities are studied insofar as they allow us to define the major faculties and parts of soul) allows Aristotle to explore differences in the ways in which the same faculties are realized in different living beings. The contrast with the definitional approach of the *DA* is highlighted by the introduction to each of the main themes of the *Sens.*, the sense-organs in *Sens.* 2 and the sense-objects in *Sens.* 3. Chapter 2 introduces the discussion of the sense-organs as follows: 'We have already spoken about the capacity (*dunamis*) which each of the senses has. But as to the parts of the body in which the sense-organs naturally occur, some seek to find them in accordance with the elemental bodies' (437b18–20). Again this seems to be a back-reference to the *DA* as having defined the sense-faculties. The reference is meant to allow Aristotle to move on to a new subject matter, the composition of the sense-organs. When *Sens.* 2 concludes by saying that the perceiving parts of *the body* have now been defined, we can take Aristotle to imply that we have now defined not only the perceptual faculty, in the *DA*, but also its bodily parts, in *Sens.* 2. *Sens.* 3, in turn, begins as follows:

Concerning the sensibles that correspond to each sense-organ, I mean for example colour, sound, odour, flavour and the tangible, we have spoken generally about these in the *DA*, what their function (*ergon*) is and what the activity (*to energein*) is according to each of the sense-organs. But we need to inquire what we should say that each of them is, for example what colour is or what sound is or what odour is or flavour, and similarly concerning touch but firstly we should inquire about colour. For each of them is said in two ways, the one as actuality, the other as potentiality. We said in the *DA* how colour and sound are the same as or different from the senses in actuality, such as seeing and hearing. But let's now say what each of them is such that it will produce perception and its actuality. (439a6–17)

This approach to the sense-objects underlines the difference between the *DA* and the *Sens.* In the *DA* the sense-objects were discussed insofar as their actuality allowed us to

⁹ *Sens.* 1 may be read as the introduction to all of the *PN* and we may think that the introduction's emphasis on activities and their distribution is quite appropriate to the rest of the *PN*. My point here is that we also have to make sense of *Sens.* 1 as an introduction to the *Sens.* itself.

¹⁰ Cf. van der Eijk (1997) 233: 'the material bodily embedding of psychic functions accounts for the occurrence of variations (*diaphoral*) both in the distribution of these functions over various kinds of animals and in their exercise.'

determine the actuality of the senses. The thought in *DA* II.4 (415a16–21) was that since actuality is prior in account (*logos*) to potentiality and the actuality of the sense-object is prior to the actuality of the sense-faculty, we need to consider the actuality of the sense-object first when defining the sense-faculties. That was why the discussions of the five senses in *DA* II 7–11 began with an account of the proper object of each sense-faculty. Aristotle's interest in the sense-objects in the *DA* was thus determined by their role in defining the sense-faculties. Accordingly, in the passage just quoted Aristotle suggests that the *DA* said what colour and sound were in actuality in their relation to the senses but not what they were in potentiality. It now seems clear that the reason why he only said in *DA* what the sense-objects were in actuality was that it was the actualities of the sense-objects that he needed to identify in order to define the sense-faculties. Now we might think that if we know the actuality of the sense-object then we can also easily state its potentiality insofar as the potentiality of the sense-object to be perceived is explained by its actuality (just as the potentiality of the sense-faculty is explained by its actuality). However, Aristotle makes it clear in the next sentence that by considering the sense-objects in potentiality he means considering what the sense-object is such that it has the potentiality to bring about perception: 'let's now say what each of the sense-objects is so as to bring about perception in actuality'. In other words, what Aristotle wants now is an account of the sense-objects which explains why they are capable of bringing about perceptions.¹¹ If this account is to be genuinely explanatory, the sense-objects' role in perception cannot itself feature in the account. Rather what we are looking for is some understanding of features of the sense-object in which the capacity to cause perception is, as we might say, grounded. There will then be two sides to accounting for the sense-objects in the *Sens.*: one to show what the sense-objects are as such, the other to show the consequences of the sense-objects' being such for perception. Notice again the difference between this approach to the sense-objects and that of the *DA*: the *Sens.* does not approach the nature of the sense-objects from the point of view of simply defining the sense-faculties; rather it enjoins us to describe, first, the nature of sense-objects independently of perception, and then the consequences for perception and its actuality (*tên aisthêsin kai tên energeian*, 439a17) of the sense-objects' having this nature.

A good example of how the *Sens.* differs in just this way from the *DA* is the discussion of colour. In the *DA* II.7 colour was said by nature to have the power to change the actually transparent (418a31–b1, 419a9–11). This account of colour was clearly linked to the role of colour in vision, insofar as vision happens when the sense of sight is affected by the colour through the actually transparent medium.¹² Moreover,

¹¹ In *τί δὲ ἕκαστον αὐτῶν ὃν ποιήσει τὴν αἴσθησιν καὶ τὴν ἐνέργειαν* at 439a16–17 the participle *ὃν* is causal/explanatory.

¹² This link was not enough to make Aristotle's definition of vision in terms of colour circular: the medium of vision, like the sense-organ of vision, is actually transparent, but neither is part of the meaning of 'the actually transparent'.

the account of colour in *DA* II.7 was generic. Aristotle mentions species of colour as well as species of other sensibles on other occasions in the *DA* (422b10–16, 426b8–12). His reason for mentioning different species of sensible on these occasions was to indicate the range of qualities that the sense-faculty in question had the potentiality to assume in perception (so 422b10–16). This information was particularly called for by Aristotle's conception of the sense-faculty as a potentiality to *discriminate* (*krinein*), where 'discriminating' means discriminating between species within a genus of sensible (421a26–b2, 426b8–16). However, the *DA* provided no account of colour itself, that is independently of vision, nor of the different species of colour. In contrast, Aristotle in *Sens.* 3 offers us the following account of colour that allows us to explain the different species of colour and thereby the different species of colour vision. Colour is 'the boundary of the transparent in a bounded body' (439b11–12). Light and darkness in unbounded bodies such as air and water are the actuality or privation of transparency. By analogy, white and black are the states of transparency and its absence in *bounded* objects (439b14–18). On that basis, Aristotle thinks we can explain the other colours as mixtures of white and black according to certain ratios. Finally, we can explain the different kinds of colour perception as the result of the agency of the different colours on the faculty of sight.

On this last point too the *Sens.* is of course fully consistent with the *DA*: it was after all in the *DA* that we learnt that the faculty of sight has the ability to be changed by colour as such and that the faculty is in potentiality what the colour is in actuality. So to be told that there are seven kinds of colour perception because there are seven kinds of colour is fully in line with the *DA*'s understanding of the relationship between sense-object and sense-perception. Indeed, if the *DA* was right in ascribing causal priority to the sense-objects over the actuality of the senses, then Aristotle has positively to differentiate the different kinds of colour if he wants to differentiate the different kinds of vision. For, given the causal priority of colour over vision, it would only be if there were different kinds of colour that we could explain why colour on different occasions acts so as to bring about different kinds of colour vision. However, it is only in the *Sens.*, and not in the *DA*, that Aristotle explains the different kinds of colour and thereby the different kinds of colour vision, for the reason that these differences were not relevant to the definition of sight as such in the *DA*. So the fact that there are seven species of colour was not relevant to the definition of sight, whereas it is relevant to our understanding of the different kinds of perception that animals engage in, given that they have the faculty of sight.¹³

The species of colour explain a further aspect of our perceptions, namely, their pleasantness or painfulness. Now which perceptions are pleasurable or painful is an

¹³ If Burnyeat (2004) is right to say that the material on sound originally included in the *Sens.* was moved to *DA* II.8, then one of the changes made to the material seems to be to have cut back drastically the discussion of the different kinds of sound. All we get on this subject in *DA* II.8 is a brief discourse (420a26–b4) on the analogies between sharp and flat in sound and in touch.

important factor in explaining animal behaviour, as we have seen. We were told in *DA* II.2 413b23–4 (cf. 414b4) that wherever there is perception, there is pleasure and pain, and wherever there is pleasure and pain, there is also appetite. The connection between perception and desire is further explored in the account of animal motion in *DA* III.9–11. Animals come to desire and pursue objects when they perceive them as pleasurable and shun them when they perceive them as painful. However, with the possible exception of taste,¹⁴ pleasantness and painfulness play no role in defining the various kinds of perception in the *DA*.¹⁵ The pleasantness and painfulness of sense-objects are features that do not play a role in the definition of the sense-faculties in Book 2 of the *DA*. That role is performed by the *proper* objects of the senses. Pleasantness and painfulness are, however, features of the sense-objects that arise out of their nature and which significantly affect our perceptions. In other words, features whose explanation is just the job for the *Sens*. Aristotle accounts for the pleasantness of colours and flavours in terms of the ratios in which their ingredients, white and black, are mixed. So there are seven pleasant colours because there are seven colours mixed from white and black according to definite ratios expressible by numbers (440a1, 442a12–19). The colours that are mixed according to indefinite ratios are less pleasant. Similarly, in the case of sounds, the pleasant ones are concords (*sumphôniai*) of high and low in accordance with numerical ratios (439b25–440a6). It is, then, by understanding how colours, sounds, and flavours are mixed that we come to understand why some perceptions are pleasant and others not. We have another example, I submit, of how a fuller characterization of the sense-objects than that provided by the *DA* allows Aristotle in the *Sens*. to explain aspects of perception not included in the definition of the sense-faculties.

The Sense-Objects in Comparative Psychology

I have given examples from the *Sens*. of how differences in the sense-objects explain aspects of perception other than those used to define the senses in the *DA*. Is there any evidence in the *Sens*. of Aristotle's using his account of the sense-objects also to demonstrate likenesses and differences between living beings? The discussion of smell in *Sens*. 5, I think, presents a paradigm of how characteristics of the sense-objects, as well as the sense-organs, allow Aristotle to establish significant differences and similarities between the perceptual activities of different animals. It may be correct, with

¹⁴ *Tò ἡδύ* and *τὸ λυπηρόν* are mentioned as objects of taste at *DA* III.13 435b23, whilst the proper object of taste, flavour (*χυμός*), is described at *DA* II.3 414b13 as a kind of seasoning (*ἡδυσμά τι*). However, neither *ἡδυσμα* nor *ἡδύ* is mentioned as a proper object of taste in the definition of taste in *DA* II.10. *τὸ γλυκύ* is mentioned as one of the species of flavour at *DA* III.2 426b11, but whether the sweet is also pleasant would seem to depend on one's attitude to food and drink at a given time. For further discussion of the object of taste, see Chapter 5 above, pp. 113–15.

¹⁵ The pleasantness of odours was also mentioned in connection with the object of smell (421a11–13), but this was in order to show our inadequate access as human beings to the proper object of smell.

W.D. Ross and Philip van der Eijk, to give a low estimate of the amount of comparative psychology offered by the *PN* in general and the *Sens.* in particular.¹⁶ Nonetheless, the discussion of smell in *Sens.* 5 provides a significant example of the sort of inquiry into the differences and similarities between animal activities which will be pursued on a much greater scale in the *PA*, *HA*, and *GA*.

The difference between human and animal smell is discussed at some length in Chapter 5 (443b17–444b7). The account of this difference is driven, as we would expect from the causal priority of the sense-objects, by an account of the differences within the sense-object, odour. Aristotle explains that there are two different kinds of odour, one that is pleasant in itself, another that is pleasant only accidentally. Odours that are pleasant accidentally are pleasant only if the perceiver has a desire to eat or drink the odorous object, whereas odours that are pleasant in themselves are pleasant irrespective of our desire to eat and drink. Only humans perceive the odours that are pleasant in themselves, a form of perception that has uniquely salutary effects on humans. It is clear that such differences do not imply that the animals and humans do not have the same sense of smell; what we rather have is a differentiation of two species within the object of smell (cf. 443b17) and thus a differentiation of two species of smelling, one of which is available only to humans. The *DA*'s definition of smell as a faculty therefore remains generally true for both humans and other animals.

Notice how in the discussion of the differences between human and animal smell Aristotle returns to the distinction between what is special and what is common, introduced in the opening lines of *Sens.* 1. So the perceptions of odours that are accidentally pleasant are said to be 'common to all animals' (443b26),¹⁷ whereas the smelling of odours that are pleasant in themselves is 'special to the nature of man' (444a28–29).¹⁸ Smelling in general is of course an activity that is special to some animals (those moving in space), whilst smelling of the *per se* pleasant odours is special to a sub-group of these animals. The differentiation of two species of odour in *Sens.* 5 is an innovation compared to treatment of smell in the *DA* and one that allows Aristotle, as we have seen, to identify one sort of olfaction that is special to one group of living

¹⁶ Ross (1955) 18 observes that 'His [Aristotle's] psychology aims at being comparative, and at being psycho-physical. Comparative psychology is not very prominent in what follows, until we come to the *De Longitudine Vitae* and the *De Iuventute*'. Ross notes the elements of comparative psychology in other treatises in the *PN* (e.g. in the discussion of smell in *Sens.* 5), though these are slim pickings by comparison with the *PA* and the *HA*. However, it may be more proper to say not that comparative psychology is not prominent in the *PN*, but that it is comparative psychology in its capacity of establishing the *common* activities of animals that comes to the fore in the *PN*, whereas comparative psychology in its capacity of showing the differences is more in evidence in the works that in our editions follow the *PN*. So van der Eijk (1997) 235 says: 'One might say that *History of Animals* VII–IX and *Generation of Animals* V discuss the *differences* that manifest themselves among different species of organisms with regard to, *i.e.*, to their perceptual apparatus, whereas in *DA* and *PN* Aristotle focuses on what all living beings possessing sense-perception have *in common*' (his italics).

¹⁷ ὥστε αὐταί [sc. αἱ ὀσμαι] μὲν, καθάπερ εἰπομεν, κατὰ συμβεβηκὸς ἔχουσι τὸ ἡδὺ καὶ λυπήρον, διὸ καὶ πάντων εἰς κοινὰ τῶν ζώων; cf. 444b5–6.

¹⁸ ἴδιον τῆς τοῦ ἀνθρώπου φύσεως; cf. 444a3.

beings, humans, as well as another sort that is common to all animals. We have, then, a clear example from the *Sens.* of how the inquiry into the sense-objects allows Aristotle to identify some perceptual activities as special to some animals, and others as common to a larger group of animals. We have, in other words, a clear example of the study into the sense-objects delivering what *Sens.* 1 promised, an account of activities that are common and special to animals.

In order to show that the smelling of the accidentally pleasant odours is truly a *common* activity Aristotle brings in the case of non-breathing animals:

But that creatures which do not breathe have the olfactory sense is evident. For fishes, and all insects as a class, have, thanks to the species of odour correlated with nutrient, a keen olfactory sense of their proper food from a distance, even when they are very far away from it; such is the case with bees, and also with the class of small ants, which some denominate *knipes*. Among marine animals, too, the murex and many other similar animals have an acute perception of their food by odour. (444b7–15; revised Oxford translation by J. I. Beare)

There is a parallel discussion in *DA* II.9 421b9–422a6 of smell in non-breathing animals. The *DA* passage is much less specific in identifying the various species of non-breathing animals, and that in itself may be taken as evidence of the greater interest in comparative psychology in the *Sens.* However, there is nonetheless sufficient similarity between the two discussions to threaten my claim that the *Sens.* has a different approach from the *DA* to the activities of perception. So let me briefly highlight the difference between the ways in which the two works discuss the case of non-breathing animals. First, what is noticeable in the *DA* is that the olfaction of non-breathing animals was brought up as a problem: given that smell happens in humans through inhalation but not so in the non-breathing animals, is what we call smell in fact two senses (421b20–1)? No, answered Aristotle, for the non-breathing animals respond to the same odours as we. Since they perceive the same ‘smellable’ (*osphranton*) as we, the sense by which they respond to it must be smell, for the sense of smell is just the sense by which we perceive the smellable. In the *Sens.*, meanwhile, the case of non-breathing animals is not used to raise a definitional question about the sense of smell. It is simply stated as ‘evident’ that the non-breathing animals perceive odours, and this is a point made in order to show that they (despite their different mechanisms of smelling) like other animals are attracted to odours on the basis of their relationship to food and drink. In *Sens.* 5 the case is thus used to underline that the odours that are pleasant accidentally are so to all animals: *wherever* there is smell, animals perceive odours as pleasant insofar as they are attracted to the odorous object as food or drink, even in the case of non-breathing animals.

The Sense-Organs in Comparative Psychology

So far I have said a good deal about how differences within the sense-objects allow Aristotle to explain both different kinds of perceptual activity and differences in those

activities between different animals. What about the sense-organs? How, if at all, do they enter into the explanation of perceptual activities in the *Sens.*? Do the sense-organs too lend themselves to comparative psychology? Let us return first to *Sens.* 2. As already mentioned, this chapter revisits the assignment of the sense-organs to the four elements in *DA* III.1. In *DA* III.1 Aristotle was concerned to show that there was no other sense-faculty than the five considered in Book II. As we saw in Chapter 9, his argument was that since all of the four elements were represented in our sense-organs, and all the sensible properties were properties of the four elements, we had by virtue of having those sense-organs the ability to perceive all the sensible properties. In *Sens.* 2 Aristotle again correlates the elements with the organs, though with minor alterations: smell, for example, is assigned to fire in *Sens.* 2 but to air or water in *DA* III.1. In the *Sens.* Aristotle's interest, however, is not in the completeness of the senses as defined in *DA* Book II; it is in the composition of the sense-organs themselves. In the case of the eye, it is clear that the *Sens.* (438b2–5) assumes the lesson of *DA* II.7 that what is to be changed by colour has to be transparent in order to be acted on by colour. It was implied here that the sense-organ of sight also had to be transparent. However, in the context of defining sight *DA* II.7 did not itself draw the implication that the eye had to be made of water or any particular kind of transparent matter. That the organ of sight is made of water is something we learn only later in *DA* III.1. This omission in *DA* II.7 should not surprise us since the identification of the *particular* transparent matter of the sense-organ of sight is not called for by the definition of the definition of sight as a faculty. The identification, however, is a job for the *Sens.* 2, given its concern for the composition of the sense-organs in themselves.

Aristotle establishes the watery composition of the eye by reference to a range of phenomena or events. It is tempting to label this section of *Sens.* 2 'things that do and do not befall the organ of sight by virtue of its composition'.¹⁹ He thus starts with an affection (*pathos*) of the eye which has led people to identify the matter of the eye with fire through their ignorance of its true cause.²⁰ This is the affection of the flash that appears when one's eyes are rubbed. The flash is not to be explained by there being any fire in the eye, but rather by its smoothness. There are other aspects of the organ of sight that the fiery composition thesis does not explain: that sight does not see itself, that it does not see without light, and that we see both in wet and in cold conditions. There is also the phenomenon of reflections of objects in the eye, which to some suggests that the eye sees those objects by means of the reflections, but which is in fact to be explained again by the smoothness of the eye. More generally, Aristotle calls for a proper understanding of optics, which will explain why the eye as a smooth object behaves such as to give rise to flashes or reflections. Other aspects of the composition of the eye are brought in to support the watery composition of the seeing part, such as the

¹⁹ Time and again Aristotle refers in the discussion to what does or does not happen (*sumbainei*, 437a25, a29, 437b2, b5, b23, 438a7, 13, 438b12, b17).

²⁰ *Sens.* 437a22–3: ποιοῦσι δὲ πάντες τὴν ὄψιν πυρὸς διὰ τὸ πάθος τινὸς ἀγνοεῖν τὴν αἰτίαν.

fact that the white of the eye is fat and oily. This explains why the water in the eyes is resistant to cold,²¹ and so, presumably why our sight is able to function even in freezing conditions, a point that the fiery composition thesis failed to explain (437b21–2). These are all accidents of the eye that are explained by the fact that the eye is made of water, and which cannot be explained on the alternative fiery composition thesis. We find in the watery composition of the eye, then, explanations of various aspects of sight, and it is the fact that the watery composition thesis explains these aspects that for Aristotle recommends it to us rather than the fiery composition thesis. Where *DA* II.7 only brought us to the point of appreciating that the organ of sight would have to be transparent, *Sens.* 2 has shown us an eye that is not only transparent but watery, smooth, and in parts oily. These are features that allow us better to understand a range of affections of the eye, some relevant to vision, others not.

As far as comparative psychology goes, the discussion of the matter of the sense-organs provides further material for comparisons between different animals. At 438a22–5 the fact that the white of the eyes of blooded animals is fat and oily explains why they do not freeze in the cold, whereas the eyes of bloodless animals have hard skin which offers similar protection. An explanation of why both blooded and bloodless animals can see in cold conditions thus follows from a consideration of different, but functionally analogous, features of their eyes. The discussion in *Sens.* 5 offers further examples. The peculiar human ability to perceive odours that are pleasant in themselves is related to the peculiar coldness of man's brain. Since these odours are hot they rise through inhalation to the brain and prevent it from getting too cold. Alongside this peculiar feature of man's physiology, which helps explain the peculiar way in which smell happens in humans, our organ of smell also has features shared with all other blooded animals. Blooded animals smell only through breathing; the reason is that their organ of smell is covered by a lid, comparable to an eyelid, which is removed only through inhalation of air. The fact that blooded animals breathe only through inhalation naturally leads Aristotle to wonder what the organ of smell could be in non-breathing animals. This is a question that has been on the cards since *Sens.* 2. Aristotle suggested in *Sens.* 2 (439b25) that smell could be correlated with fire since odour was held to be a smoke-like exhalation. But in *Sens.* 5 (443a30) he explicitly retracts this claim because 'a smoke-like exhalation cannot occur in water, and water animals too smell'. Given this retraction, it is appropriate now to wonder 'what the organ is whereby they [non-breathing animals] perceive odours' (444b15–16). Aristotle's solution is to explain the difference between the organs of smell in breathing and non-breathing animals by analogy with the difference in the eyes between soft-eyed animals with eyelids, like man, and hard-eyed animals with none. This difference in the organs further explains why breathing animals only smell when they breathe but the non-breathing ones are

²¹ *Sens.* 438a21–4: ὅπερ διὰ τοῦτ' ἐστί, πρὸς τὸ διαμένειν τὸ ὕγρον ἀπηκτον, καὶ διὰ τοῦτο τοῦ σώματος ἀρρηγότατον ὁ ὀφθαλμὸς ἐστίν· οὐδεὶς γάρ πω τὸ ἐντὸς τῶν βλεφάρων ἐρρίγωνεν.

able to smell at all times, ‘on the basis of what is possible for them from the start’ (444b27–8), presumably the ‘innate breath’ referred to elsewhere.²²

It is true that there is a considerable overlap between the comparative material on smell mentioned in *Sens.* 5 and in *DA* II.9. *DA* II.9, like *Sens.* 5, points both to the inferiority of human smell and the superiority of human touch. However, the reason why Aristotle in *DA* II.9 talked about the difference between human and animal smell is that he wanted to underline the difficulty for us humans of identifying the proper object of smell and therefore the difficulty we find when trying to define the sense of smell by its proper object:

Smell and its object are much less easy to determine than what we have hitherto discussed; the distinguishing characteristic of smell is less obvious than those of sound and colour. The ground of this is that our power of smell is less discriminating and in general inferior to that of many species of animals. (421a7–10)

All of this made good sense as an exploration of why we have peculiar difficulties in defining smell compared to the other senses. Aristotle then (421a10–b8) proceeded to explain why human smell is inaccurate (because of its organ), how it is imprecise (we have only access to odours based on the pleasant and painful and name them after flavours), and he naturally drew comparisons with the relative accuracy of our other senses. He also argued (421b9–422a7) that smell is a mediated sense and in this context he brought in the difference between blooded animals which smell by breathing in air and animals that smell in the medium of water. He explained why smell happens by inhalation in blooded animals: we have a sort of ‘nose-lid’ comparable to the eyelid that is lifted when we breathe in. However, the key point for Aristotle in deploying the comparative material in *DA* II.9 was to show that the sense of smell can be defined as the same irrespective of the mechanisms by which animals smell. Smell is whatever sense we perceive odours by, whether by inhalation or not. Moreover, smell is always a mediated sense whether we smell in water or air; there is, also for this reason, no danger of smell collapsing into a form of taste.²³ The comparative material is thus used in the *DA* to show the difficulty of defining smell and the universality of the definition of smell. In contrast, the comparative material in *Sens.* 5 does not relate to the definition of the faculty of smell; rather it is used to highlight differences as well as similarities between the sense-objects and the sense-organs, differences which in turn we could use to explain the modalities of olfaction in different animals.

What I hope to have shown here is that whilst *Sens.* 5 revisits some of the same comparative material from *DA* II.9, it does so in a manner that is consistent with the distinctive concerns of the *Sens.* with the nature of the sense-objects (cf. the distinction between two species of odour) and the composition of the sense-organs (cf. the

²² *PA* II.16 659b17–18.

²³ On Aristotle’s difficulties in defining smell in a manner that keeps it distinct from taste, see Chapter 5 above.

difference between the organ of smell in breathing and non-breathing animals). These concerns are distinct from the question that marked Aristotle's discussion in *DA* II.9, namely, that of the implications of non-breathing olfaction for the definition of the faculty of smell as a distinct and unitary faculty.

How, finally, do the *aporiai* in Chapters 6 and 7 of the *Sens.* tie in with this interpretation? The *aporiai* concern the sense-objects. However, it is clear that Aristotle wishes to draw out implications for the activity of perception from these *aporiai*. So he asks whether the power of the sense-objects is infinitely divisible, and says that if so, then our perception of the sense-objects too should also be infinitely divisible in that that there should be a perception of every part of what is infinitely divisible. He resolves the *aporia* by showing how, although the sense-object is infinitely divisible, each part need only be actually perceptible as part of the whole to which it belongs. We can divide one 'ten-thousandth part in a grain of millet' and this part will be actually perceptible as part of the millet grain, but not on its own where it is only potentially visible (445b7–446a20). The *aporia* is thus dealt with by drawing the appropriate distinction on the side of the sense-object between perceptible in potentiality and perceptible in actuality. Another issue explicitly raised as a question about the sense-perceptions (*peri tas aisthêseis*, 447a12) is whether 'it is possible or not that one should perceive two objects simultaneously in the same individual time' (447a12–14). Again this *aporia* is dealt with by understanding how the same sense-object can be qualified by different attributes at the same time (449a13–19). Again, in these *aporiai* the explanation of the accidents of perception proceeds from a fuller understanding of the modalities of the sense-objects.

In conclusion, I take it as a recommendation of my interpretation that it makes sense of two pressing questions about the *Sens.* The first is the relationship between the *DA* and the *Sens.* Why was the discussion of perception called for in the *Sens.* in addition to the account given already in the *DA*? The study of the sense-organs and the sense-objects in the *Sens.* was motivated, I have suggested, by Aristotle's wish to explain features of perception beyond their roles in defining the sense-faculties and thereby the soul, the roles according to which they had been accounted for in the *DA*. The other question concerns the relevance of the introduction of *Sens.* 1 to the main business of the *Sens.*, the discussion of the sense-organs and the sense-objects. The explanation I have given is that, on the principle that the sense-objects are causally prior to the acts of perception, we can account for the variety of sensory activities by providing a fuller account of the sense-objects than that required to define the sense-faculties as such. Moreover, we can use our understanding of the nature of the sense-organs to explain a range of features of perception (such as how we can see in the cold or how we smell by breathing) that do not enter into our definitions of the senses. Since attributes of perception that do not define the senses were such that creatures with the same senses might differ with respect to them, we could meaningfully pursue questions as to which of these attributes were shared by which species and why. The key suggestion, then, was to draw the contrast between the *DA* and *Sens.* in terms of the *DA* being a work

meant to define the faculties, and thereby the main kinds of soul, and the *Sens.* as a work that sets out to account for the various activities of various living beings that do not define those faculties but which they engage in as a result of having those faculties. In this way, the *Sens.* reads, as it should, as a stage in Aristotle's psychology premised on, but also distinct from, that of the *DA*.

Capacities in the *PN*

What light does the use of perception in the *PN* throw on the causal role of the capacities of the soul? The capacities of the soul were presented in the *DA* as the formal, final, and efficient cause of life phenomena. With the lifting of the definitional constraint in the *PN*, we are no longer considering these capacities as the formal, final, and efficient causes of their characteristic activities as such. We are no longer considering the sense-faculty by virtue of its capacity to cause perception as such and so neither are we considering the capacities as the formal, final, and efficient cause of perception as such. We are instead seeking to explain perceptually based activities such as dreaming, remembering, sleeping. These may involve the perceptual capacity as a cause, in either of the three ways mentioned, but if so they will not involve the perceptual capacity as a cause in the way in which it is a cause of perception as such. So the perceptual capacity is involved in the explanation of sleep since sleep is the temporary suspension of the perceptual capacity. However, the efficient cause of sleep is not to be found in the perceptual capacity as such but in the movements of the blood that is caused by nutriment. Sleep also has a final cause, but again this is not a final cause which is proper to perception, but proper to the animal as a whole, since sleep helps preserve it as animal (*Somn.* 458a25–32). We observed the same point in the case of *phantasia* which depended on the perceptual capacity, but whose final cause lay in its benefit to the animal as a whole (the 'for whom') rather than in fulfilling the function of perception as such (the 'for the sake of which').²⁴ Aristotle shows how the perceptual capacity provides the contents of dreams. But he denies that dreaming has a final cause in any sense, and so, *a fortiori* that it should have the same final cause as the perceptual capacity as such. Finally, while the perceptual capacities determined the body in a certain way, so sight determined that its organ be transparent, the non-defining perceptual activities involve a range of other features and activities of the body which extend beyond those features directly determined by the capacity, which was why, I argued, Aristotle wanted to approach these activities as common to body and soul. So, for example, some of the bodily processes involved in dreaming happen independently of perception, such as the reflux of heat to the heart during sleep which transports sensory images to the central *sensorium* (*Insomn.* 461a3–8).

²⁴ See above Chapter 10, pp. 205–7.

The last point offers a significant qualification of the point sometimes made that the *DA* treats perceptual processes from a formal point of view, while the *PN* focuses on the material aspects. The *DA* did not ignore material accounts of the psychological phenomena: Aristotle, as we saw in Chapter 8, insisted that the formal account should be couched in terms that implied a specific material account. The *DA* also consistently drew out this implication, for example, in showing how the sense-organs had to be composed of certain kinds of matter. Nor, as we have just seen, does the *PN* omit formal, final, or efficient explanations of the phenomena considered. However, it is true to say that material explanation plays a greater role in explaining the psychological phenomena considered in the *PN* exactly because they are phenomena that are not fully determined by the capacities of the souls themselves.²⁵ The greater element of material explanation in the *PN* does not then show a shortage of material explanation in the *DA* in relation to its *explananda*, but rather that the *explananda* in the *PN* are different in a way that creates a greater role for material explanation.

²⁵ Cf. Wedin (1988) 3: '*Sens.*'s distinctly physiological emphasis suggests that the difference between *DA* and the *PN* consists in the fact that the former shows little interest in physiological details.'

The Capacities in the Parts and Lives of Animals

Underlying my discussion of the *DA* was the thought that certain capacities were basic to the definition of soul. By defining these we could therefore also define soul in its basic forms. As parts of the definition of soul they enjoyed definitional independence from each other. Other capacities and affections of living beings could be explained by virtue of these capacities. When we moved into the *Sens.*, however, the focus on defining the capacities that belonged to soul as such was lifted. The next phase was to focus not on soul as such, but on living beings and the different ways in which they were affected, given an understanding of what their basic capacities were. Now a similar difference in kinds of focus may be recognized in the following passage from *Metaph.* VII.10, which I cited above in Chapter 3 in connection with showing the priority of the parts in definition:

And since the soul of animals (for this is the substance of a living being) is their substance according to the formula, i.e. the form and the essence of a body of a certain kind (at least we shall define each part, if we define it well, not without reference to its function, and this cannot belong to it without perception), so that the parts of soul are prior, either all or some of them, to the concrete 'animal', and so too with each individual animal; and the body and parts are posterior to this, the essential substance, and it is not the substance but the concrete thing that is divided into these parts as its matter:—this being so, to the concrete thing these are in a sense prior, but in a sense they are not. For they cannot even exist if severed from the whole; for it is not a finger in any and every state that is the finger of a living thing, but a dead finger is a finger only in name. Some parts are neither prior nor posterior to the whole, i.e. those which are dominant and in which the formula, i.e. the essential substance, is immediately present, e.g. perhaps the heart or the brain; for it does not matter in the least which of the two has this quality. But man and horse and terms which are thus applied to individuals, but universally, are not substance but something composed of this particular formula and this particular matter treated as universal; and as regards the individual, Socrates already includes in him ultimate individual matter; and similarly in all other cases. A 'part' may be a part either of the form (i.e. of the essence), or of the compound of the form and the matter, or of the matter itself. But only the parts of the form are parts of the formula, and the formula is of the universal; for 'being a circle' is the same as the circle, and 'being a soul' the same as the soul. (1035b14–1036a1; revised Oxford transl. by W. D. Ross)

There are complex metaphysical issues involved in this passage, such as the relationship between form and matter and universal and particular and the status of each term in relation to substance. However, one point that seems fairly clear and relevant to us is the distinction between accounting for the soul as such and accounting for the soul as embodied. In the *DA* Aristotle attempted to define the soul as such, its essence. Accordingly, the parts of the soul enjoyed definitional priority over the whole: that was why we could account for the soul by first defining its various constitutive capacities. However, Aristotle suggests in the *Metaph.* that when we consider a living being as a compound of form and matter, then the parts of the soul do not enjoy definitional priority in relation to the whole living being. When, as in the *PA*, we turn to explaining the parts of the body by which animals are characterized it is clear that the explanatory perspective has changed from that of considering the parts of the soul as such to considering them in relation to the parts of body of different kinds of animal. The perspective is here holistic in the sense that it considers the animal as a whole compound of soul and body. The starting point is then a certain kind of living being, say man, whom we consider and explain as a compound of soul and body.

In this chapter I want to consider how adopting this holistic perspective on the capacities of the soul, as realized in the body in particular kinds of living being, affects Aristotle's presentation of them. In particular, I want to ask whether, and if so how, the 'modularity' of the capacities such as we found it in the *DA* can be maintained once we see them realized as parts of psycho-somatic wholes.

The account of the basic capacities of the soul in the *DA* was 'modular' in the sense that each capacity was defined in terms of its own specific and discrete objects with no cross reference to each other. These capacities were definitionally independent and could therefore serve to also differentiate the souls of different kinds of living being. However, a holistic perspective was not entirely absent from the *DA*. So in the final chapters of the *DA*, III.12–13, Aristotle approached the distance senses in terms of their contributions both to the survival of animals with locomotion, and to the well-being of animals with intellect. The animal occurred in such final explanations as the beneficiary: distance perception was good for the animal given that it was such as to move or think. Such final causal explanations, I suggested, represented, therefore, a shift in Aristotle's explanatory perspective from the modular one to a holistic one.

This holistic perspective which explains the manner in which the capacities work with reference to the good of a living being came to the fore also in *Sens.* 1, where Aristotle again explains why it is necessary or good for different animals to have the various kinds of perception. I want to pursue this theme in this chapter by including the biological works: how is the presentation of the capacities affected by adopting the holistic perspective?

One question that naturally arises once one draws a distinction between a modular and a holistic approach to the capacities of the soul is about their compatibility. What ensured modularity in the *DA* seemed primarily the object criterion, whereby capacities were defined in terms of discrete objects. When we look at how the capacities are

integrated in different living beings, does such integration involve revisiting the accounts of the capacities also in terms of their proper, defining functions? Or can we, as we could in the case of the affections considered in the *Sens.*, explain them in an extension of the basic capacities with the addition of further explanatory factors, such as material explanation, final causal explanation in terms of beneficiary, and perhaps other factors?

All animals of course have a nutritive capacity. In the *DA* this was defined, as we saw, prior to and independently of the perceptual capacity. However, once we consider these capacities as jointly realized in the animal we find a range of ways in which the operation of nutrition is affected by its serving perception, ways which constitute differences from the way nutrition works in a plant. One very basic way is that nutrition in an animal serves first and foremost the purpose of maintaining the structures necessary for perception. For example, the first thing to be formed in an animal embryo is the heart (*GA* 735a21–5), which is the centre of sense-perception. Moreover, the blood serves as material for the flesh which is the organ of touch and as such necessary for the animal to survive. The other function of the nutritive soul, reproduction, is also modified by being subordinated under perception or intelligence. So in *HA* VII (VIII) 1 Aristotle points to the gradual differentiation in reproductive habits as we ascend from plants to unintelligent animals, and, in turn, to intelligent animals:

Of plants that spring from seed the one function seems to be the reproduction of their own particular species, and the sphere of action with certain animals is similarly limited. Such activities, then, are common to all alike. If sensibility is added (*prosousês*), then their lives will differ from one another in respect of sexual intercourse through the varying amounts of pleasure derived from it, and also with regard to modes of parturition and ways of rearing their young. Some animals, like plants, simply procreate their own species at definite seasons; other animals busy themselves also in procuring food for their young, and after they are reared quit them and have no further dealings with them; other animals are more intelligent and endowed with memory, and they live with their offspring for a longer period and on a more social footing. (588b24–589a4, rev. Oxford transl.)

It is worth noting here the extent to which the addition of perception affects reproductive behaviour: whilst some aspects, for example the addition of pleasure, might seem extrinsic to reproduction, others like the form of parturition are clearly not. For animals reproduction is clearly not operationally independent from perception. The presence of the perceptual soul within a living being clearly changes how nutrition works compared to plants. Aristotle presents this difference in how nutrition operates as a difference in action (*praxis*) between plants and animals, in a way that may relate to the use of *praxis* at the beginning of the *Sens.* However, there is no need to see the difference which perception makes to the operation of reproduction as a change in the way reproduction should be defined: the *DA*'s account of reproduction as the production of another thing such as oneself stands (415a28, 416b15–16). The point is rather

that you cannot fully explain how a capacity *so understood* works in animals without showing how it is influenced by the capacity of perception. Aristotle is not revisiting the difference between the nutritive and perceptual capacities as such in the *HA*; rather he is pointing to the difference between how nutrition is *actualized* in plants and animals.

Let's also consider the reverse relationship: how might perception be influenced by satisfying the nutritional needs of different animals? There is a particularly close relationship between the contact senses, taste and touch, and nutrition. All animals must have the contact senses in order to be able to discern what is nourishing from what is not (cf. *DA* III.12 434b13–24). By helping us perceive flavours, taste in particular is concerned with what is nourishing. So we learn in *Sens*.

That flavours, either as an affection or as a privation, belong not to every kind of dry but to nutriment, we should grasp from the fact that neither the dry without the wet, nor the wet without the dry, is nutriment. For one element alone is not nutriment for animals, but what has been mixed. Now, belonging to the food assimilated by animals, some of the perceptibles are tangible ones producing growth and decay; for the assimilated nutriment is responsible for these *qua* hot and cold, since these produce growth and decay. It is *qua* tastable, however, that what is assimilated nourishes. For all things are nourished by the sweet, either by itself or when mixed. We must determine these matters in the work on generation, but for now just touch on them to the extent necessary. (*Sens*. 4, 441b23–442a4).

It is tempting to infer from the claim that 'it is *qua* tastable that what is assimilated nourishes' that the proper object of taste is also nutriment. But if so, there is an overlap between the proper objects of taste and nutrition. One obvious first retort to this problem is to recall from our discussion of nutrition in Chapter 5 that the nutritive is a productive capacity, and so nutriment is a final cause and not an efficient cause as is the case in taste. The same kind of reply would go for the objection that touch and nutriment have the same object: the dry and the wet.

However, there is in fact no need to rely on this reply in the case of taste. For Aristotle's explanation of the way in which the tastable nourishes shows how nutriment differs from what we taste. For he explains the way in which the nutriment nourishes *qua* tastable by saying that it is the sweet that nourishes because it is light. What '*qua* tastable' seems to mean, then, is not that an animal is nourished insofar as the food tastes sweet to it, but insofar as what makes it taste sweet, its being light, is also what makes it nourishing (cf. 442a6). After all, Aristotle thinks that it is the way that sweet food behaves in the stomach (cf. 442a11–12) rather than on the tongue that makes it nourishing. Moreover, if Aristotle held that tasting food was enough to be nourished by it, he would be driving a wedge between the way food nourishes animals and plants. It is noticeable also that it is not in the chapter of the *DA* devoted to defining taste (II.10) that we learn that taste deals with what is nourishing. We can acknowledge, then, the full importance of the way in which taste works with nutrition to help the animal survive without undermining the definitional distinctness of taste

from nutrition. The integration of the capacities within an animal in this case still allows for their definitional discreteness.

A similar story emerges when we consider the relationship between the distance senses, and locomotion. In *DA* III.12, the distance senses (smell, sight, hearing) were said to be for the sake of well-being (434b25). This does not mean that they are dispensable to the animals that have them. Rather, distance senses are necessary for those animals that move place since they need to be able to spot objects in advance of moving away from or towards them. Again, however, the distance senses operate differently according to the different ways in which animals move. For example, both fish and birds move great distances and therefore need to be able to spot objects at a great distance. Birds have therefore been equipped with fluid eyes giving them excellent vision. Fish, too, have fluid eyes. However, they still do not see as well as birds since they swim in murky waters. Nature has compensated for this by endowing them with excellent hearing and smell, which, as fishermen know, direct them towards food from afar.¹ The general point is that such animals' distance perception is teleologically geared to their ecological needs. Their characteristic form of locomotion in conjunction with their environment and lifestyle explains the kind of distance perception with which the animals have been equipped. More particularly, it explains the degree of keenness with which objects seen, heard, or smelled by an animal.

I turn now to the relationship between perception and reason. *Sens.* 1 analyses the contribution of the distance senses to the well-being of animals into two factors: their contribution to the survival of locomotive animals and their contribution to knowledge. Aristotle puts the point as follows:

To all those animals which have [the distance senses] these exist for the sake of their survival, in order that they perceive food before they pursue it, and may avoid what is bad and destructive, while in those animals that also have knowledge (*phronêsis*) these senses exist for the sake of their well-being (*to eu*); for they inform them of many differences from which arises knowledge (*phronêsis*) both of the objects of thought and of practical matters. (436b20–437a3)

Aristotle seems careful not to name human beings at 437a1 as the species that participates in *phronesis*.² Elsewhere, Aristotle suggests that non-human animals have a kind of *phronêsis*, or perhaps *phronêsis* of a kind.³ How exactly to take this attribution of *phronêsis* to animals is debated.⁴ However, I take it from the mention also of thought objects (*noêta*) that Aristotle's main concern in this passage is with humans.

In humans, then, the distance senses are subordinate to two different faculties, locomotion and the intellect. (Locomotion, in turn, is also subject to the intellect which introduces a further difference in the cause of locomotion (*orexis*) for human beings, explained, as we saw in Chapter 10, by Aristotle in *DA* III.9–11.) The distance

¹ Cf. *PA* II.13. ² Note the plural: *tois de*.

³ Cf. *PA* II.2 648a2ff where degrees of intelligence is explained by reference to the thinness and coolness of blood. At *HA* 588a15 animals are given wisdom by analogy with human beings.

⁴ Cf. Labarrière (1990) and Coles (1997).

senses are thus part of two different psychic hierarchies, contributing in different ways in animals and humans to the performance of locomotion and intellectual thought. Philip van der Eijk plausibly relates the contribution of perception to intelligence to the distinction at *GA* V.1 (780b15ff) between two kinds of keenness of perception, the ability to perceive an object from afar and the ability to discern (*diaisthanesthai*) the differences in the sense-objects. Whereas man, for his size, is the worst of animals at spotting objects from afar, humans are the best at perceiving the differences between objects (781b18–23).⁵ As van der Eijk says, the fact that ‘the latter manifests itself in humans can be related to the cognitive and epistemological importance of the discrimination of differences, which is... at the basis of rational understanding which is characteristic of human cognition.’⁶ The two different roles of distance perception in relation to locomotion and intelligence seem to result then in a differentiation in the modes of perceiving well. The information of the distance senses is, as it were, a lot more fine-grained when brought into a psychic hierarchy topped by the intellect.

What is not clear from this, however, is whether subordination to the intellect brings any greater conceptual richness to perception. In *GA* V.1, as Balme notes, accuracy of vision is restricted to perceiving differences of colour, the proper object of sight. And it is far from clear how perceiving more shades of colour should help make you any the wiser about the sorts of things *Sens.* 1 talks about, that is practical and theoretical matters. Aristotle, however, bridges this gap in the next lines by bringing in also the common and the accidental sensibles.

... of these sight is *per se* more powerful in relation to the necessities of life (*ta anagkaia*), whereas hearing *per accidens* contributes more to the intellect (*pros noun*). For the faculty of sight announces many and varied differences since all bodies participate in colour, with the result that also the common sensibles are first and foremost perceived through this faculty (by these I mean size, shape, change, number). However, hearing only announces the differences of sound, and for a few living beings also the differences of voice. But *per accidens* hearing makes the greatest contribution to knowledge (*phronêsis*); for speech (*ho logos*) by being heard is the cause of learning, not *per se* but *per accidens*. For speech is composed of words and each of the words is a symbol. That is why of those who have been deprived of either sense from birth the blind are more knowledgeable (*phronimóteroi*) than the deaf and dumb. (437a3–17)

Aristotle now says that sight announces not just many differences but that it announces many and varied (*pantodapas*) differences. We have moved beyond mere colours to talk also of the common sensibles. For Aristotle common sensibles are of course perceptible *per se*, though as common they can be perceived by more than one sense. However, they are first and foremost (*malista*, a8) perceived through sight, since all bodies are coloured.

⁵ Τὴν μὲν οὖν πόρρωθεν ἀκρίβειαν τῶν αἰσθήσεων ἦκιστα ὡς εἰπεῖν ἄνθρωπος ἔχει ὡς κατὰ μέγεθος τῶν ζώων, τὴν δὲ περὶ τὰς διαφορὰς μάλιστα πάντων εὐαίσθητον. αἴτιον δ' ὅτι τὸ αἰσθητήριον καθαρὸν καὶ ἦκιστα γεώδες καὶ σωματώδες, καὶ φύσει λεπτοδερμότατον τῶν ζώων ὡς κατὰ μέγεθος ἄνθρωπος ἐστιν.

⁶ van der Eijk (1997) 238.

Nothing Aristotle says about the contribution of sight to the necessities of life here seems to be exclusive to animals with *phronêsis*. Rather we would expect some sort of perception of common sensibles to be shared by most, if not all, locomotive animals. It is in the case of hearing that Aristotle makes the contribution of the distance senses to the intellect explicit. Unlike sight, hearing as such only reveals one kind of difference, differences in sound (*psophos*). However, there is a subgroup of differences in sound, namely differences in voice (*phônê*) which are perceptible only to a small group of animals. Elsewhere, in *HA* IV.9, Aristotle makes it clear that there are only a few other animals that have voice, and still fewer which have speech (*dialektos*). Aristotle's concern is partly to show which animals have and which have not the sort of equipment needed to produce voice and partly to show how the tongue works as an organ of taste. However, whether a given species has the right tongue is clearly also determined by whether it is the kind of species that can produce and understand voice and this is a matter of having the right kind of soul. To produce voice you need to strike a sound together with *phantasia* (*meta phantasias tinos*) since voice is a kind of meaningful sound (*sêmantikos tis psophos*) (*DA* II.8 420b33). Speech is communication (*hermêneia*, *DA* 420b19, cf. *PA* 660a35) and to understand a sound, and in particular speech, you need to be able to perceive the differences of sound as meaningful. In the passage just quoted from *Sens.* 1 speech (*logos*) is said to be composed of words (*onomata*) and each word is said to be a symbol (*sumbolon*). Aristotle offers this by way of explanation (*gar*, a14) of why audible speech is not a cause of learning *qua* audible. It is not the cause of learning *qua* audible because it has to be not just heard but heard as words that mean something. To use the example of Alexander of Aphrodisias, when people speak a foreign language, whilst we hear it, we do not grasp what is said as speech (*logos*).

It might be argued that when Aristotle says that speech is not heard *per se* but *per accidens* he means to say that it is not really heard at all but rather inferred from what is heard.⁷ However, the reason why differences of voice are not heard *per se* is not that they are not heard but that the faculty of hearing on its own is insufficient to distinguish differences of sound as differences of voice without the help of another faculty, the intellect.⁸ In contrast, we are capable of seeing both colours and shapes by sight without the help of other faculties. So when I see that white thing in the distance as a man, the content of my sight is directly given in vision, that is it is not inferred.

⁷ See Sorabji (1992) 197: 'It would be wrong to suppose that this propositional perception really involves an inference of reason merely on the ground that sense-qualities, like colour, are said to be essential (*kath' hautou*) objects of perception, whereas the son of Diaries and the son of Cleon, who enter into propositions, are said to be coincidental sense-objects (*kata sumbebêkos*). Coincidental does not mean inferential. I have argued elsewhere that the reason why colour is said to be essential to sight is that sight is defined as the perception of light, shade, and colour. By contrast the son of Diaries is not essentially related to colours seen, and hence not to sight. It is this that accounts for his being called a coincidental object of perception. There is no suggestion that he is perceived only indirectly by way of inference.'

⁸ Cf. the discussion of accidental perception above, Chapter 9, pp. 183–4.

However, the fact that I can represent 'man' in my visual experience is down to the fact that my intellect provides content to my sense of sight.

Moreover, we should remember that the context of the passage is to underline the teleology of the *senses* by showing the special contribution that the distance senses make to knowledge. This point is much less powerful if the idea is merely that on the basis of certain perceptual promptings our reason can make knowledgeable inferences. For then we lose in an important way the idea that it is hearing that teaches us. Recall the opening of Aristotle's *Metaph.*, that we love the senses because of what *they* show us and teach us.

The way I read Aristotle his point is that there is a set of further differences of sound, namely differences of voice, which are only available to animals with intellect since only they can produce and interpret these differences as meaningful. The subordination of hearing under the intellect thus produces a set of auditory differences which are marked out from other sounds because they are understood by the perceiver as linguistically meaningful. Voice then seems a good example of how the intellect can give sensory experiences added content.

However, the content added to perception through its integration with the intellect continues to count as accidental sensibles. As accidental, it does not determine the definition of the sensory faculty as such. It is, therefore, perfectly consistent with modularity to think that perception becomes richer in information in this way by being integrated within a soul that has intellect.

The examples I have offered in this chapter tend to underline the point that the internal—not just the relational—properties of faculties are affected by being part of the psychic hierarchy of a particular kind of living being. So, human perception is importantly different from animal perception. However, it would still be wrong to say that human perception and animal perception differ in their *essential* attributes. Humans are capable of hearing generally the same kind of differences of sound that are available to other animals. That, after all, is why Aristotle in *DA* II.8 can define hearing quite generally in terms of a certain kind of object, the high and the low pitch. The fact that there is a certain kind of sense-object, sound and its seven main species, in terms of which hearing in general is defined, ensures that hearing is also identifiable as the same faculty across different species, whatever the psychic hierarchy. However, what we have found is that there are certain differences in the information which perception delivers to human beings or other animals with an intellect that arise because they have intellect. There are differences in perceptual content caused by the fact that human perception is informed by an intellect.

The integration of the psychic capacities is one aspect of viewing living beings as wholes. Another is looking at the way in which the capacities work within the bodies of living beings. The capacity I shall focus on in this context is perception. Perception is the capacity that defines animals. In the *PA* Aristotle, therefore, takes his starting point in the parts of the body which are instruments of perception, which directly or indirectly include almost all the parts of the body. Now one question one might

have is why, if all animals have perception and the kinds of perception are defined basically in the same way for all animals, they do not all have the same sense-organs. If vision, for example, requires transparency, and transparency is best realized in watery eyes with thin membranes and so on, why don't all animals have exactly the same kind of eyes? Simply from the point of view of what vision requires, the functional requirements seem the same.⁹ Yet Aristotle observes considerable variation in the way the organs are composed in different animals.

The factors involved in determining the sense-organs are complex and reflect the several ways in which animals are characterized. The *HA* lists four different ways in which animals differ from each other: in their lives (*bioi*), actions (*praxeis*), habits (*êthê*), and their parts (*moria*).¹⁰ He illustrates differences in life by living in water vs. living on land; differences in actions include inhaling air or not;¹¹ differences in parts are for example having wings vs. having fins; differences in character being mischievous like the fox or affectionate like the dog. These differences are related to each other: so a water animal may well have fins and propel itself by swimming, from which land animal are excluded (if we ignore the so-called 'dualizers', animals which, for example, live both on land and in the sea, like the seal). Moreover the four kinds of differences may work together to differentiate one kind of animal from another. So there are birds with weak feet but strong wings that are grouped together on the basis of their similarity both in habits and parts (487b27–8), and while man may share his social way of living with the bee (488a8–10), only he is capable of deliberating (488b24). We need then to think of these categories as a matrix of differences which together will characterize different kinds of animals.

Consider how the sense of taste works in the snake. Snakes and lizards are distinguished by having a long, forked tongue:

The serpents have it [sc. the tongue] long so they can stretch it out from small to great, and forked, with a fine, hair-like tip, because of their gluttonous nature; for it procures double the pleasure from flavours, having, as it were, double the perception of taste. (*PA* II.17 660b5–11)

The observation that snakes perceive flavours as if in stereo, and have tongues fittingly designed, relates directly then to their gluttonous character.¹² This is clearly a holistic

⁹ As Leunissen (2007) 171 observes.

¹⁰ *HA* I.1 487a 11–21: Αἱ δὲ διαφοραὶ τῶν ζώων εἰσὶ κατὰ τε τοὺς βίους καὶ τὰς πράξεις καὶ τὰ ἦθη καὶ τὰ μόρια, περὶ ὧν τύπων μὲν εἰπωμεν πρῶτον, ὕστερον δὲ περὶ ἕκαστον γένος ἐπιστήσαντες ἐροῦμεν. Εἰσὶ δὲ διαφοραὶ κατὰ μὲν τοὺς βίους καὶ τὰ ἦθη καὶ τὰς πράξεις αἱ τοιαῖδε, ἧ τὰ μὲν ἐνυδρὰ αὐτῶν ἐστί τὰ δὲ χερσαῖα, ἐνυδρὰ δὲ διχῶς, τὰ μὲν ὅτι τὸν βίον καὶ τὴν τροφήν ποιεῖται ἐν τῷ ὕδατι, καὶ δέχεται τὸ ὕγρον καὶ ἀφίγησι, τούτου δὲ στερισκόμενα οὐ δύναται ζῆν, οἷον πολλοῖς συμβαίνει τῶν ἰχθύων· τὰ δὲ τὴν μὲν τροφήν ποιεῖται καὶ τὴν διατριβὴν ἐν τῷ ὕδατι, οὐ μέντοι δέχεται τὸ ὕδωρ ἀλλὰ τὸν ἀέρα, καὶ γεννᾷ ἐξω.

¹¹ Differences in lives and actions are not sharply distinguished by Aristotle and some of his cases seem to illustrate both (cf. 487b33–4).

¹² Cf. *HA* 594a6–13: the gluttony of snakes extends to drinking wine to excess.

explanation since we need to know facts about the nature of snakes in order to understand how their sense of taste works.

In the same vein, consider Aristotle's explanation of the differences between animals' eyes (*PA* II.13). Eyes need to be transparent to respond to colour, and greater transparency provides keener vision, as we saw. Liquid eyes ensure transparency: that is why soft-eyed animals see better than hard-eyed ones. Soft eyes are more prone to injury than harder ones, however, which is why nature has offered them protection in the form of eyelids. There is a further difference in the way the eyelid is constructed in different animals: oviparous quadrupeds have a lower eyelid, while birds have an upper eyelid. But nature has not let them down:

The four-footed, egg-laying animals do not blink in the same way as the birds, because since they are terrestrial, it is unnecessary for them to have moist and accurate vision. But for birds it is necessary, since they use vision to see from a great distance. Accordingly the crook-taloned birds have sharp vision (for they search for their food from above, which is also why these most of all soar to the heights), while those which are terrestrial and incapable of flight, such as domestic fowl and the like, do not have sharp vision. For nothing related to their way of life requires them to have it. (*PA* II.13 657b22–9; transl. Lennox)

It is appropriate then for the land-dwelling oviparous quadrupeds not to have the sorts of eyelids that allow sharp vision, since they do not require it given their way of living.¹³ In contrast, predatory birds need to be able to spot their prey from great heights and so need keen eyesight. The difference in the organs of these animals directly reflects the different ways in which the capacity for vision works given their different lives. We cannot understand fully how vision works in these different animals, and the differences in their sense-organs, unless we take into account their characteristic lives.¹⁴

There is another feature to the explanation of the eyelids of oviparous quadrupeds. Aristotle says that these animals do not have upper eyelids since they have scales. The skin around their heads is therefore hard, though lower down it is softer and fleshy. So while the skin from above cannot be used to form a flexible eyelid the lower skin can. Since as we saw lower eyelids reduce sharpness of vision, we have here a material explanation of why these quadrupeds do not see so well. However, the material explanation also reflects another formal-final causal explanation. For the reason why the quadrupeds are scaly is to protect their backs living as they do on the ground.¹⁵ Rather than saying simply that the scaly backs of oviparous quadrupeds offer a material

¹³ Cf. Johansen (1997) 162–4 and 221.

¹⁴ It is therefore misleading to argue, as does Leunissen (2007) 171, that final causes are secondary to formal causes because 'final causes of parts are demonstrated to belong to parts through the functionally defined substantial being of an animal'. This seems to imply that final causes are only operative at the level of the parts and not at the level of what is good for the animal as a whole. When we talk about the life of animal being explanatory of its parts we will think about how the animal best realizes its nature.

¹⁵ That hair protects the back of quadrupeds is explicit in *PA* II.14 658a18–21, while *HA* III.10 517b 4–6 refers to scales as the analogue of hair.

explanation of their reduced vision, it is better to say that the matter of these animals is determined by a combination of functions, including protection and vision, appropriate to the kind of animals they are. This again brings us back to holistic character of these variations in vision in different animals.

None of these examples has provided evidence that holism requires a modification in the *DA*'s definitions of the capacities. The differences we have looked at have all been differences in the degree of keenness or intensity with which animals perceive. The fact that some animals perceive better with some senses than others shows us nothing about how the senses in themselves differ. Indeed, one might hold that such differences in degree require that the capacity whose performance is being compared is the same. Modularity serves holism in that it is only given a basic understanding of the capacities of the soul that differences between living beings, at various levels of generality, can be judged as differences in kind or differences in degree. If the capacities were all essentially indexed to different kinds of lives there would be trouble for Aristotle's recommended method in the *PA* of accounting jointly for those attributes that are shared by many different kinds of animal, where they differ only by degree or qualification, and then later their distinctive characteristics.¹⁶ For the claim that different animals share the same attributes here presupposes that we have a fix on these attributes prior to approaching their appearances in particular kinds of animal. The talk of characteristics that differ in degree across different animals again makes sense only if we have a notion in the first place of what the kind of characteristic is. It is these determinations of the psychological characteristics, I have argued, which the *DA* provides. The way to read the modularity of the *DA*'s approach is, then, not as a competitor to the holism of the biological works, but as a supporting structure.

¹⁶ Cf. *PA* I.1 639a30–b6 with I.5 645b1–14, and the discussion above in Chapter 3, pp. 64–7.

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