

First Principles in Aristotle's Psychology: The Science of Soul in *De Anima* 1

Jason W. Carter, Lincoln College

DPhil

Hilary, 2015

This thesis analyses the method, purpose, and results of Aristotle's treatment of a select number of Presocratic and Platonic theses about the soul within the context of *De Anima* 1. Contrary to a prevalent interpretation of *De Anima* 1 which sees Aristotle's treatment of his predecessors' psychological views as dialectical, I argue that Aristotle treats his predecessors as having offered potentially viable hypotheses about the nature of the soul, and that these hypotheses are treated as attempts to explain the soul's basic powers. I further show that, in order to test the explanatory limits of these theories, Aristotle uses a version of the scientific method of inquiry advertised in the *Prior* and *Posterior Analytics*, which consists in setting out the basic psychological phenomena which psychology should explain, and then testing the extent to which his predecessors' definitions of the soul are able to accomplish this task. This thesis argues that, by demonstrating where his predecessors' first principles fall short, Aristotle is able to make theoretical progress towards establishing his own 'hylomorphic' first principle of soul, that soul is the 'first fulfilment of a natural instrumental body', and towards the idea that soul operates in the body of living beings as a formal, final, and efficient cause.

References and Abbreviations

Within the main text and footnotes, excepting introductory quotes, the reader will find the following standard abbreviations for Aristotle's works:

<i>APo</i>	<i>Posterior Analytics</i>
<i>APr</i>	<i>Prior Analytics</i>
<i>Cat.</i>	<i>Categories</i>
<i>DA</i>	<i>On the Soul</i>
<i>EE</i>	<i>Eudemian Ethics</i>
<i>GA</i>	<i>On Generation of Animals</i>
<i>GC</i>	<i>On Generation and Corruption</i>
<i>HA</i>	<i>On the History of Animals</i>
<i>Insomn.</i>	<i>On Sleep</i>
<i>MA</i>	<i>On the Motion of Animals</i>
<i>MM</i>	<i>Magna Moralia</i>
<i>Metaph.</i>	<i>Metaphysics</i>
<i>Meteor.</i>	<i>Meteorology</i>
<i>NE.</i>	<i>Nicomachean Ethics</i>
<i>PA</i>	<i>On the Parts of Animals</i>
<i>Phys.</i>	<i>Physics</i>
<i>Pol.</i>	<i>Politics</i>
<i>Resp.</i>	<i>On Respiration</i>
<i>Rhet.</i>	<i>Rhetoric</i>
<i>Sens.</i>	<i>On Sense and Sense Objects</i>
<i>SE</i>	<i>On Sophistical Refutations</i>
<i>Spirit.</i>	<i>On Breath</i>
<i>Top.</i>	<i>Topics</i>

For Plato's works, the reader will find the following abbreviations:

<i>Crat.</i>	<i>Cratylus</i>
<i>Gorg.</i>	<i>Gorgias</i>
<i>Leg.</i>	<i>Laws</i>
<i>Men.</i>	<i>Meno</i>
<i>Phaed.</i>	<i>Phaedo</i>

<i>Phaedr.</i>	<i>Phaedrus</i>
<i>Phileb.</i>	<i>Philebus</i>
<i>Polit.</i>	<i>Statesman</i>
<i>Rep.</i>	<i>Republic</i>
<i>Soph.</i>	<i>Sophist</i>
<i>Tim.</i>	<i>Timaeus</i>
<i>Theaet.</i>	<i>Theaetetus</i>

In reference to the Greek commentators, the reader will find the following abbreviations:

Alex. =	Alexander of Aphrodisias
Philop. =	Johannes Philoponus
Themist.=	Themistius
Simplic. =	Simplicius
Sophon. =	Sophonias

In reference to other ancient authors, the reader will find the following abbreviations:

Eurip. =	Euripides
Herod. =	Herodotus
Hom. =	Homer
Aesch. =	Aeschylus
Theophr. =	Theophrastus

Additionally, the reader will find the following abbreviations used:

DK =	H. Diels, <i>Die Fragmente der Vorsokratiker</i> , 6th edition, revised by Walter Kranz, 3 Vols. (Berlin: Weidmann, 1951).
KRS =	G. Kirk, J. Raven, and M. Schofield, <i>The Presocratic Philosophers</i> . (Cambridge: Cambridge University Press, 1983).
LSJ =	H. Liddell and R. Scott, <i>A Greek-English Lexicon</i> (Oxford: Clarendon Press, 1940).
OCT =	Oxford Classical Text Edition
TEGP =	D. Graham, <i>The Texts of Early Greek Philosophy: The Complete Fragments and Selected Testimonies of the Major Presocratics</i> , 2 vols. (Cambridge: Cambridge University Press, 2010).

ROT = J. Barnes, *The Complete Works of Aristotle* (Princeton: Princeton University Press, 1984).

Unless otherwise noted, all translations are my own. For longer Greek quotations in the main body of the text, I have adopted the practise of marking out premises in bracketed roman numerals, (i), (ii), etc., which are referred to in the reconstruction of arguments. The reader will find the Greek text of all longer quotations provided in a footnote. Some Greek will also be found within translated texts in brackets in order to draw attention to important terms or phrases.

Acknowledgements

It is a privilege to be able to dedicate this thesis to my wife, Lauren I.J. Carter. It was she who initially suggested that I apply to Oxford to pursue my burgeoning interest in ancient philosophy, and she who worked to support me financially so that I could pursue the contemplative life during my graduate years unhindered by practical concerns. For this, and for her unflagging support of me during times of doubt, I am forever grateful.

This dissertation also would not have been possible without the help and encouragement of my mentors at the University of Georgia, O. Bradley Bassler and Elizabeth Brient, both of whom gave me the personal attention I needed to grow as a philosopher, and whose passion for philosophical inquiry left an indelible mark on me. I must also thank Edward Halper, whose course on Ancient Philosophy of Mathematics sealed my desire to study ancient philosophy.

At Oxford, I must thank especially David Charles, whose critical abilities, kindness, and patience provided me with a model for how to do ancient philosophy. I must also thank Christopher Shields, who gave me the invaluable opportunity to read and suggest revisions to his forthcoming translation of *De Anima* at a critical stage in my dissertation. I must also thank Lindsay Judson, who, after graciously agreeing to become my second supervisor, gave me crucial advice during the later stages of this work and saved me from countless embarrassments, despite whatever errors remain. Amongst the other faculty at Oxford to whom I owe thanks for helping me to become both a better scholar and a better human being are: Terry Irwin, Gail Fine, Edward Hussey, Richard Swinburne, Jessica Moss, Paolo Fait, Anna Marmodoro, Ursula Coope, Cecilia Trifogli, and Michail Peramatzis.

Above all, however, I must thank my primary supervisor, Thomas Johansen, who recognised in my early inchoate and undisciplined work as a Master's student an ability to be a scholar, and who pushed me to my intellectual limits and beyond at nearly every supervision meeting we had. I am forever grateful that he took the time and effort to refine this scholarly ability in me over the past four years, and I hope this thesis will provide some evidence that it was worth the effort.

Oxford–Reading

Table of Contents

References and Abbreviations.....	2
Acknowledgements.....	5
Introduction to the Study	10
1 <i>Background to the Study</i>	10
2 <i>Outline of the Study</i>	14
3 <i>The Limits of the Study</i>	16
Chapter 1. The Path to First Principles: Method and Explanation	18
1.1 <i>Introduction</i>	18
1.2 <i>Potential Solutions to the Methodological Challenge</i>	22
1.3 <i>Aristotle's Partial Solution to the Methodological Challenge</i>	25
1.4 <i>Aristotle's Full Solution to the Methodological Challenge</i>	28
1.5 <i>The Method of Scientific Inquiry in De Anima</i>	31
1.6 <i>The Method of Scientific Inquiry and the Predecessors</i>	37
1.7 <i>The Method of Scientific Inquiry in De Anima 1.3-5</i>	41
1.8 <i>The Method of Scientific Inquiry as the Path to First Principles</i>	44
1.9 <i>A Potential Objection</i>	45
1.10 <i>Conclusion</i>	50
Chapter 2. The Principle of Self-Motion: Plato and the Academy.	52
2.1 <i>Introduction</i>	52

2.2	<i>The Platonic First Principle of Soul</i>	53
2.3	<i>The Soul's Motion: Unnecessary or Impossible?</i>	55
2.4	<i>The First Horn of the Dilemma: Soul is Moved Per Se</i>	63
2.5	<i>The First Horn Continued: Natural and Forced Motion.....</i>	70
2.6	<i>The First Horn Concluded: Resurrection from the Dead</i>	76
2.7	<i>The Second Horn: Soul is Moved Per Accidens</i>	79
2.8	<i>The Final Refutation: The Self-Destructing Soul.....</i>	82
2.9	<i>Soul as an Inner Principle of Motion and Rest.....</i>	86
2.10	<i>Conclusion</i>	89
Chapter 3. The Principle of Attunement: The Harmony Theory		91
3.1	<i>Introduction.....</i>	91
3.2	<i>Analysis of the Harmony Theory.....</i>	94
3.3	<i>The Movement Argument</i>	96
3.4	<i>The Harmonising Explanation Argument</i>	99
3.5	<i>The Composition of Capacities Argument</i>	108
3.6	<i>The Many Souls Argument</i>	115
3.7	<i>Empedocles and the Harmony Theory</i>	118
3.8	<i>The Truth in the Harmony Theory</i>	121
3.9	<i>Conclusion</i>	125
Chapter 4. The Principle of Cognition by Likeness: Empedocles		127
4.1	<i>Introduction.....</i>	127

4.2	<i>Aristotle's Account of Empedocles' Psychology</i>	128
4.3	<i>The Criticism of Empedocles' Psychology</i>	137
4.4	<i>The Limitations of 'Like Cognises Like'</i>	142
4.5	<i>The Principle that 'Like Cognises Like' and Panpsychism</i>	145
4.6	<i>The Results of Aristotle's Criticism of 'Like Cognises Like'</i>	147
4.7	<i>The Modal Modification of 'Like Cognises Like'</i>	148
4.8	<i>The Second Modification of 'Like Cognises Like'</i>	153
4.9	<i>Conclusion</i>	156
Chapter 5. The Principle of Non-Uniform Soul.....		157
5.1	<i>Introduction</i>	157
5.2	<i>Is the Soul Uniform?</i>	158
5.3	<i>The First Missing Capacity Argument</i>	160
5.4	<i>The Second Missing Capacity Argument</i>	162
5.5	<i>The Third Missing Capacity Argument</i>	164
5.6	<i>The Solution to the Puzzle of the Soul's Uniformity</i>	168
5.7	<i>The Orphic Theory of Soul</i>	170
5.8	<i>Soul as an Independent Element in a Mixture</i>	173
5.9	<i>Parts of the Universe vs. Parts of the Soul</i>	177
5.10	<i>Aristotle's Problem with the Mixture Theory</i>	182
5.11	<i>How to Define a Non-Uniform Soul</i>	183
5.12	<i>Conclusion</i>	184

Chapter 6. The Principle of Spatial Divisibility: The Parts of Soul and Body	186
6.1 <i>Introduction</i>	186
6.2 <i>Spatial-parts vs. Capacity-parts</i>	187
6.3 <i>A Platonic Problem about Soul-Parts</i>	189
6.4 <i>The Unity of Soul Challenge</i>	192
6.5 <i>Platonist Presuppositions in the Unity of Soul Challenge</i>	196
6.6 <i>Aristotle's Principle of Unity</i>	197
6.7 <i>The Whole-Part Challenge</i>	199
6.8 <i>Life in the Division of Body and Soul</i>	203
6.9 <i>A Potential Objection</i>	207
6.10 <i>Conclusion</i>	210
Conclusion to the Study	213
Bibliography	218

Introduction to the Study

He who travels every path will not find out the limits of the soul, so deep is his account.

– Heraclitus¹

1 *Background to the Study*

The Greeks generally believed that living things differed from non-living things in virtue of possessing something called ‘soul’ (ψυχή). But what is the soul? When Aristotle comes to give his view of soul in *DA* 2.1, he argues that it is necessary for soul to be a substance (οὐσία), and substance in the sense of form (εἶδος), as opposed to matter (ὕλη) or a composite, and form in the sense of a fulfilment (ἐντελέχεια).² If this were not difficult enough, he then claims that, of the two kinds of fulfilment – the first being a state like knowledge, the second being the active contemplation of this knowledge – the soul is the first kind of fulfilment, and belongs to a natural instrumental body which has life potentially.³ On the basis of these identifications, Aristotle then gives his explicit answer to the question, ‘What is soul?’: soul, he claims, is ‘the first fulfilment of a natural instrumental body’ (ἐντελέχεια ἡ πρώτη σώματος φυσικοῦ ὁργανικοῦ).⁴

Most contemporary scholars agree that this definition of soul is best understood as belonging to Aristotle’s hylomorphic theory of nature. Hylomorphism,

¹ Adopting the text of Betegh (2009).

² *DA* 2.1, 412a19-20.

³ *DA* 2.1, 412a27-28.

⁴ *DA* 2.1, 412b5-6.

in the sense I take it here, is the theory that all natural bodies in the world are ultimately composed of two fundamental principles: matter (ὕλη) and form (μορφή).⁵ Given this theory, Aristotle's common definition of soul in *DA* 2.1 – call it the Hylomorphic Definition of Soul – claims that: (a) soul is an instance of form, (b) the instrumental body in which soul resides is an instance of matter,⁶ and (c) a living being is a unified item which is composed of both soul (form) and instrumental body (matter).

From this hylomorphic definition of soul, one might infer that all that the soul is for Aristotle is the formal part of a material being, a sort of intelligible 'aspect' of an ensouled being that remains constant throughout the various changes it undergoes during the course of its life, much like the shape of a weathered statue.⁷ However, at the beginning of *DA* 2.4, Aristotle shows that hylomorphism in psychology goes beyond this idea of formal aspect. Drawing upon his scientific theory of the four kinds of cause, namely, the formal, final, efficient, and material cause,⁸ Aristotle attempts to determine with precision which kind of cause(s) the soul can function as.⁹ In doing so, a fuller view of Aristotle's hylomorphic psychology emerges. Aristotle writes:

But the soul is the cause (αἰτία) and the first principle (ἀρχή) of the living body. But these things are said in many ways, and similarly, the soul is the cause in each of the three ways we have defined. For the soul is (a) the cause

⁵ Cf. Kelsey (2010, 109): '[...] the doctrine we call 'hylomorphism' is a doctrine about the principles or 'causes' of natural things. It says not only that natural things can be divided into matter and form, but also that the items yielded by this division are their very elements and principles, their very nature and substance.'

⁶ Cf. Williams (1986). On the history of how the term 'hylomorphism' entered into standard scholarly use, cf. Manning (2013).

⁷ An excellent picture of this view of soul is provided in Nussbaum (1984). However, that form is 'constant' in the sense that it cannot undergo certain changes is more controversial.

⁸ Cf. *Phys.* 2.3, 194b16-195a3; *Metaph.* A.3, 983a24-983b1.

⁹ *DA* 2.2, 413b11-13. On heterogeneous background of these four causes, cf. Schofield (1991).

‘from which’ (ὅθεν) motion begins, and (b) the cause ‘for the sake of which’ (οὗ ἕνεκα) and (c) as the substance (οὐσία) of ensouled bodies. So, that it is a cause as substance is clear. For the cause of being for everything is its substance (οὐσία); but life is being for animals, and the cause and first principle of life is soul. Still, the expressible form (λόγος)¹⁰ is the fulfilment of what is in potentiality. But it is also apparent that the soul is the cause in the sense of ‘for the sake of which’. For just as intellect produces for the sake of something, in the same manner does nature [produce], and this is its end (τέλος). But the sort of end which accords with nature in a living being is the soul. For all the natural bodies (τὰ φυσικὰ σώματα) are instruments (ὄργανα) of the soul, just as [the natural bodies] of animals [are instruments], and in this way also [the natural bodies] of plants [are instruments], and these exist for the sake of the soul. But there are two senses of ‘that for the sake of which’, the end ‘for which’ and the ‘for whom’. But indeed soul is also that ‘from which’ local motion first begins, although this capacity does not belong to all animals. And alteration and growth also occur in respect of the soul (κατὰ ψυχὴν). (DA 2.4, 415b8-24)¹¹

Here it becomes clear that Aristotle wants to affirm more than what the Hylomorphic Definition of Soul might at first suggest, namely, that soul is just substance in the sense of the *formal cause* of the living body. He also wants to affirm that soul is the *efficient cause* of the characteristic motions of a living body (such as local motion, perceptual alteration, and growth), and that it is the *final cause* of the structure and regular development of the living body through time. Call this latter claim Aristotle’s Hylomorphic Causality Thesis.

¹⁰ I use ‘expressible form’ to capture Aristotle’s idea that the essence of an object can be expressed by a verbal formula. Hicks (1907), for a similar reason, translates these occurrences of λόγος as ‘notion or form’. Cf. DA 2.1, 412b11-16.

¹¹ ἔστι δὲ ἡ ψυχὴ τοῦ ζῶντος σώματος αἰτία καὶ ἀρχή. ταῦτα δὲ πολλαχῶς λέγεται, ὁμοίως δ’ ἡ ψυχὴ κατὰ τοὺς διωρισμένους τρόπους τρεῖς αἰτία· καὶ γὰρ ὅθεν ἡ κίνησις καὶ οὗ ἕνεκα καὶ ὡς ἡ οὐσία τῶν ἐμψύχων σωμάτων ἡ ψυχὴ αἰτία. ὅτι μὲν οὖν ὡς οὐσία, δῆλον· τὸ γὰρ αἷτιον τοῦ εἶναι πᾶσιν ἡ οὐσία, τὸ δὲ ζῆν τοῖς ζῶσι τὸ εἶναι ἔστιν, αἰτία δὲ καὶ ἀρχὴ τούτου ἡ ψυχὴ. ἔτι τοῦ δυνάμει ὄντος λόγος ἡ ἐντελέχεια. φανερόν δ’ ὡς καὶ οὗ ἕνεκεν ἡ ψυχὴ αἰτία· ὥσπερ γὰρ ὁ νοῦς ἕνεκά του ποιεῖ, τὸν αὐτὸν τρόπον καὶ ἡ φύσις, καὶ τοῦτ’ ἔστιν αὐτῆς τέλος. τοιοῦτον δ’ ἐν τοῖς ζῴοις ἡ ψυχὴ κατὰ φύσιν· πάντα γὰρ τὰ φυσικὰ σώματα τῆς ψυχῆς ὄργανα, καθάπερ τὰ τῶν ζῴων, οὕτω καὶ τὰ τῶν φυτῶν, ὡς ἕνεκα τῆς ψυχῆς ὄντα· διττῶς δὲ τὸ οὗ ἕνεκα, τὸ τε οὗ καὶ τὸ ᾧ. ἀλλὰ μὴν καὶ ὅθεν πρῶτον ἡ κατὰ τόπον κίνησις, ψυχὴ· οὐ πᾶσι δ’ ὑπάρχει τοῖς ζῶσιν ἡ δύναμις αὕτη. ἔστι δὲ καὶ ἀλλοίωσις καὶ αὔξεισις κατὰ ψυχὴν·

Why, however, does Aristotle think that the soul functions as *these* three causes, as opposed to just one or two of them? Further, what is his justification for implicitly denying that the soul could be a *material* cause? I shall argue in the following chapters that a partial answer to these questions can be found in Aristotle's review and criticism of his predecessors' theories of soul in *DA* 1. These theories, I shall argue, place certain explanatory constraints on Aristotle's hylomorphic theory of the soul, which constraints govern both what sort of entity Aristotle can plausibly affirm the soul to be, and the kind of causal role it must play in relation to the living body.

The first and most fundamental of these constraints on Aristotle's hylomorphic psychology are the initial phenomena concerning the soul which he claims the predecessors have rightly handed down, namely, that (a) the soul is the cause of the body's local motion, (b) that soul is the cause of a living being's perception and cognition,¹² and (c) that soul is either a non-bodily (ἄσωματός) entity, or an extremely fine grained body.¹³

Aristotle argues that all of his predecessors attempted to explain these psychological attributes on the basis of the first principles (ἀρχαί) they adopted.¹⁴ Although Aristotle rejects many of his predecessors' first principles outright (for example, Democritus' atoms), nevertheless, I shall argue that his careful exploration of the consequences of his predecessors' first principles allows Aristotle to proceed along a certain path which justifies both the Hylomorphic Definition of Soul – which definition places soul into the category of formal substance – and his adoption of the

¹² *DA* 1.2, 403b24-28.

¹³ *DA* 1.2, 405b12. Cf. Hicks (1907, 234). Cf. *DA* 1.5, 409b21. Strictly speaking, thesis (c) is seen by the predecessors (for example, in Democritus) as providing an explanation for thesis (a).

¹⁴ *DA* 1.2, 405b11-12.

Hylomorphic Causality Thesis, which affirms that soul is also a final and efficient causal principle of the characteristic activities of living bodies.

Such a picture, I shall argue, suggests that Aristotle's psychological hylomorphism should be understood less as a drastic metaphysical replacement of his predecessors' first principles, and more of a developmental modification of them. Among these modified principles are, for example, (a) the Platonic principle that the essence of soul is the *efficient cause* of the *per se* motions of living bodies, (b) the principle of the harmony theorists that soul is the *formal cause* or 'ratio' (λόγος) of the mixtures in a living body, and (c) the Empedoclean principle that soul perceives on the basis of a like-cognises-like principle. I shall also claim that Aristotle takes over from his predecessors other ancillary theses, again with certain modifications, such as (d) the Platonic principle that the soul has certain 'parts' which govern the body's activity.

2 *Outline of the Study*

The way I shall advance my argument for this thesis is as follows:

In *chapter one*, I give an account of Aristotle's method for discovering the essential definition or first principle of an object under investigation, which I call the method of *scientific inquiry*, and show that Aristotle treats his predecessors' theories of soul as subject to this method.

In *chapter two*, I show how Aristotle follows the method of scientific inquiry to show that the Platonic definition of soul as a self-mover entails that the soul will either be a material element, or that it will destroy itself during motion. What Aristotle gains from this criticism of Plato, I argue, is the idea that one can't explain the soul's ability to be an efficient cause of the body's motion by treating soul as a physical stuff which has its own internal principle of motion. Instead, Aristotle suggests that soul

will need to be identified as itself an inner principle of the body's motion if it is to be an efficient cause of the local motion of living beings.

In *chapter three*, I show how Aristotle follows his method of scientific inquiry to argue against the definition of soul as a harmony of bodily opposites by arguing that bodily, arithmetical, and geometrical properties are not explanatory of any of the soul's basic attributes. The results of this critique, I argue, show that soul must be considered to be an entity whose power to act as an efficient and formal cause of the body cannot be explained by mathematical form or elemental powers in combination with such a form. What Aristotle takes over from the harmony theory, however, is the idea that the soul is a kind of non-mathematical form (λόγος) of the living body and its parts, and that soul is tied essentially to the body, and that body is tied essentially to soul.

In *chapter four*, I show how Aristotle follows his method of scientific inquiry in scrutinizing Empedocles' elemental theory of soul, in order to show that the latter's principle that 'like cognises like' is too limited to explain the extent of our knowledge. However, I go on to show that, by adding two important modifications to the principle that 'like cognises like', Aristotle is able to import a version of Empedocles' principle into his own hylomorphic psychology.

In *chapter five*, I show how Aristotle follows his scientific method of inquiry to show that, in general, his predecessors' first principles are at best able to provide an explanation of *either* the soul's power of perception, or its power to initiate local motion, but not *both*. This result, I claim, lays the groundwork for Aristotle's difficult claim in *DA 2.3* that there is no single entity called 'soul' in nature, but only various kinds of soul which must be investigated separately.

In *chapter six*, I show how Aristotle follows his method of scientific inquiry to make an empirical advance over the Platonic theory that the soul has determinate spatial-parts in the body. What Aristotle takes over from this theory, I argue, is that the soul does have ‘parts’ which exercise powers within the body, even though these parts cannot be understood as spatial-parts. These observations, taken together, imply that the soul cannot be a bodily substance, but is more likely the form of such a body.

In the *conclusion to the study*, I assess the general contribution that Aristotle’s criticisms make towards justifying the Hylomorphic Definition of Soul, the Hylomorphic Causality Thesis, and the ancillary hylomorphic theses about the soul noted above.

3 *The Limits of the Study*

Given the small number of predecessor theories of soul that the present work discusses, it will of course not cover *all* the contributions that *DA 1* makes to the establishment of psychological hylomorphism. For instance, I shall neither discuss (except incidentally) Aristotle’s important puzzle in *DA 1.1* concerning how the affections of the soul are to be defined, nor whether soul can be considered as ‘separable’ from the body (except incidentally).¹⁵

Fortunately, none of the stipulations on definition or separability that Aristotle establishes in *DA 1.1* are appealed to explicitly in any of the criticisms of the predecessors advanced in *DA 1.2-5* (an unusual fact which no doubt requires its own explanation). The upshot of this for the present work is that the arguments of *DA 1.2-5* can be analysed fruitfully without relying upon Aristotle’s hylomorphic discussions of the soul’s affections and separability from the body in *DA 1.1*.

¹⁵ *DA 1.1*, 403a3-403b19.

Neither shall the present work discuss *all* the philosophers that Aristotle engages with in *DA* 1. In particular, this work will not give a full treatment of Aristotle's criticisms of Democritus and Leucippus, Anaxagoras, Plato's *Timaeus*, or Xenocrates. To do so would require a work of at least twice the size of this one.

Finally, I have also left out a discussion of the celebrated puzzle that occurs in *DA* 1.4 concerning whether the soul is moved when it feels pain and joy, confidence and fear, etc.,¹⁶ and the puzzle about whether the intellect is something imperishable.¹⁷ These two puzzles, I have come to believe, are best understood as being linked to Aristotle's hylomorphic observations about the soul's affections presented in *DA* 1.1, and thus fall outside of the scope of the thesis here.

Despite these limitations on the present study, I hope that, by allowing the aforementioned philosophers and puzzles to remain in the background, the brilliance of Aristotle's criticisms of the predecessors and theories which I discuss in the following chapters, and the rigour with which he attempts to mine even the smallest gem of truth from them, will shine through even more brilliantly.

¹⁶ *DA* 1.4, 408a34-408b18.

¹⁷ *DA* 1.4, 408b18-29.

The Path to First Principles: Method and Explanation

We must notice, however, the difference between arguments from principles and arguments towards principles. For indeed Plato was right to be puzzled about this, when he used to ask if the argument set out from the principles or led towards them – just as on a race course the path may go from the starting line to the far end, or back again.

–**Aristotle**, *Nicomachean Ethics*, 1095a30-b1

1.1 Introduction

Aristotle formulates the project of *De anima* as an inquiry (ἵστορία) into the essence (οὐσία) and nature (φύσις) of the soul.¹⁸ However, how can we discover the essence of something, or something's essential definition,¹⁹ if we do not even know what sort of thing it is? This is the methodological problem that Aristotle faces near the opening of *DA* 1:

But (i) even to arrive at some belief (τινα πίστιν) about it [sc. soul's essence] is in every possible way one of the most difficult things to do. For, (ii) it being common to this investigation (ζητήματος) and to many others – I mean, the investigation into the essence (οὐσίαν) of something and 'the what-it-is' (τὸ τί ἐστι) – in this case there might appear to be some single method (μέθοδος) applicable to everything about which we wish to know (γινῶναι) the essence, just as (iii) [for knowing] the demonstrable attributes (τῶν κατὰ συμβεβηκός

¹⁸ *DA* 1.1, 402a4.

¹⁹ In what follows, I take 'essence', 'essential definition', and 'scientific definition' to be synonymous with one another.

ιδίων)²⁰ there exists demonstration (ἀπόδειξις), which implies that we ought to seek this same method. But (iv) if there is not a single common method for finding the what-it-is, our handling of the matter becomes even more difficult. For (v) it will be necessary to ascertain for each individual thing in what manner (τρόπος) it should be investigated. But (vi) even if it were apparent whether we ought to proceed by a kind of demonstration (ἀπόδειξις τίς)²¹ or division (διαίρεσις), or even some other method, still, there will be many puzzles and perplexities (πλάνας) about from what premises (ἐκ τίνων) we ought to begin our search.²² For (vii) there are different starting points (ἀρχαί) for different subjects,²³ such as for numbers and for geometrical surfaces. (DA 1.1, 402a10-22)²⁴

Aristotle's remarks here reflect a serious methodological difficulty. In fact, the difficulty is so serious that it challenges the very possibility of discovering the soul's essential definition. Call it Aristotle's Methodological Challenge. It can be formulated as follows:

1. To find out what some *X* is, it is first necessary to seek out the right method. (ii)-(v)

²⁰ Here, Aristotle must mean 'τὰ καθ' αὐτὰ συμβεβηκότα' of *APo* 1.7, 75b1, necessary attributes which do not feature in the definition of a thing, but can be deduced from it. Cf. *DA* 1.1, 402a8. Cf. Hicks (1907, 177).

²¹ I read τίς with MS Sy. Torstrik (1862, 113) rightly notes that if demonstration is of attributes, then the demonstration of the 'what-it-is' will be a different kind of demonstration. Cf. *Metaph.* B.2, 997a30-32.

²² Cf. *Phys.* 1.1, 184a19-25, where Aristotle identifies those things from which (ἐκ τίνων) we gain knowledge of the elements and first principles of things as the items/premises which are more intelligible to us (ἐκ τῶν γνωριμωτέρων ἡμῖν) at the outset of an inquiry.

²³ Here, Aristotle means ἀρχή in the epistemic sense as that 'from which a thing first becomes knowable', which is expressible as a premise which can be used, for example, in demonstrations. Cf. *Metaph.* Δ.1, 1013a14-16.

²⁴ πάντη δὲ πάντως ἐστὶ τῶν χαλεπωτάτων λαβεῖν τινα πίστιν περὶ αὐτῆς. καὶ γάρ, ὄντος κοινοῦ τοῦ ζητήματος καὶ πολλοῖς ἑτέροις, λέγω δὲ τοῦ περὶ τὴν οὐσίαν καὶ τὸ τί ἐστὶ, τάχ' ἂν τῷ δόξειε μία τις εἶναι μέθοδος κατὰ πάντων περὶ ὧν βουλόμεθα γινῶναι τὴν οὐσίαν, ὥσπερ καὶ τῶν κατὰ συμβεβηκὸς ιδίων ἀπόδειξις, ὥστε ζητητέον ἂν εἴη τὴν μέθοδον ταύτην· εἰ δὲ μὴ ἔστι μία τις καὶ κοινὴ μέθοδος περὶ τὸ τί ἐστίν, ἔτι χαλεπώτερον γίνεται τὸ πραγματευθῆναι· δεῖσει γὰρ λαβεῖν περὶ ἑκάστων τίς ὁ τρόπος, ἐὰν δὲ φανερόν ᾗ πότερον ἀπόδειξις τίς ἐστίν ἢ διαίρεσις ἢ καὶ τις ἄλλη μέθοδος, ἔτι πολλὰς ἀπορίας ἔχει καὶ πλάνας, ἐκ τίνων δεῖ ζητεῖν· ἄλλαι γὰρ ἄλλων ἀρχαί, καθάπερ ἀριθμῶν καὶ ἐπιπέδων.

2. Every method begins from starting points peculiar to the subject of inquiry. (vii)
3. So, to find out what soul is, it is first necessary to seek out the right method and the right starting points. (vi)

The conclusion of this methodological challenge asserts that we cannot begin an investigation into the essence of the soul until we know the answer to two questions: (A) what is the proper method for discovering the essence of soul, and (B) what starting points or premises does the method for discovering the essence of soul begin from?

At first sight, it seems that Aristotle has blocked all possible ways of answering each of these questions. In respect of question (A), outside of the *De Anima*, Aristotle is clear that neither the philosophical method of demonstration (ἀπόδειξις),²⁵ nor the Platonic method of division (διαίρεσις)²⁶ – a method which features prominently in Plato’s *Sophist* and *Politicus* – is sufficient for establishing an essential definition of anything.

The former method cannot be used because a demonstration can only derive conclusions *from* pre-given starting points, amongst which are definitions (ὀρίσμοι) and the ultimate principles of demonstration. However, it is just this sort of ultimate definition of soul which Aristotle is seeking in *De Anima*.²⁷ However, the latter method cannot be used either, for in *APo* 2.5, Aristotle argues that the method of

²⁵ *Metaph.* B.2, 997a30-32. At *APo* 2.4, 91a12-b11, Aristotle rules out ἀπόδειξις as a method for proving a definition which figures as the conclusion of a demonstrative syllogism; he shows that all such attempts involve a *petitio principii*. At *APo* 2.6, 92a6-33, he also argues against the method of arriving at a definition through hypothesis. However, Cf. *Top.* 7.3, 153a23-26.

²⁶ *APo* 2.5, 91b12-92a5. However, it is also possible that Aristotle is referring to a more current Academic theory of division, e.g. that of Speusippus. Cf. Ward (2008).

²⁷ *APo* 2.3, 90b30-34. Cf. *Top.* 8.3, 158b2-4.

division cannot yield an essential definition. The first reason for this is because the definitional predicates ‘divided out’ by this method may turn out to be accidental (e.g. if one tries to construct a definition of ‘man’ by dividing animals into winged and not-winged, the definition of ‘man’ turns out to be ‘not-winged animal’). The second reason is that a division may fail to capture an intermediate or final differentia essential to the definition (in the case of man, the differentia ‘rational’).²⁸

Whilst Aristotle does think that the method of division is useful for beginning an inquiry into a definition, he does not think that it is sufficient on its own to find a definition.²⁹ Further, even if it were sufficient, it would be unclear how to determine rightly the genus from which to begin the division. Even granting that the soul falls under the pseudo-genus of ‘being’ (τὸ ὄν),³⁰ in order for the method of division to be of any use, Aristotle would already have to know which of the highest ‘divisions’ of being the soul falls under (e.g. substance, quality, quantity, relation, etc.).³¹ Despite the fact that Aristotle eventually affirms that the soul belongs to the genus of substance (οὐσία),³² throughout *DA* 1, Aristotle neither asserts this claim, nor, I shall argue, does he rely upon it.

Aristotle’s remark about numbers and geometrical surfaces having different starting points reflects his worry about question (B). According to *APo* 1.7, because Aristotle thinks that many of the starting points or first principles of individual sciences are peculiar to the genus the science concerns, he also thinks that one cannot use first principles peculiar to one science to demonstrate the truths of another, unless

²⁸ *APo* 2.5, 91b12-92a5.

²⁹ Cf. *APo* 2.13, 96b27-97b6.

³⁰ Aristotle denies that the non-categorical term ‘being’ is a real genus at *APo* 2.7, 92b14 and *Metaph.* B.3, 998b22.

³¹ *DA* 1.1, 402a23-24.

³² *DA* 2.1, 411a19-21.

one of these sciences is subordinate to the other.³³ For example, since Aristotle believes that numbers fall under the generic first principle of ‘discrete quantity’, and geometrical extension falls under the different and non-subordinate generic first principle of ‘extended quantity’, he is committed to the idea that one cannot prove propositions about numbers from first principles falling within the domain of geometry, and *vice versa*.³⁴ Although Aristotle is deliberately vague as to what sort of ἀρχή he has in mind here, namely, ultimate first principles, or preliminary starting points, his point seems to be that, without a proper answer to (B), psychological inquiry is in danger of making use of first principles that belong to another scientific genus. Given that neither (A) nor (B) has any obvious answer, how then does Aristotle solve the Methodological Challenge?³⁵

1.2 *Potential Solutions to the Methodological Challenge*

Broadly speaking, scholars who think that Aristotle has a workable solution to the Methodological Challenge are split into two camps. The first camp holds that Aristotle’s method for discovering the soul’s essential definition is induction (ἐπαγωγή).³⁶ The second camp holds that Aristotle’s method is dialectic (διαλεκτική).³⁷

³³ Cf. *APo* 1.9, 75b37-76a2. Whether Aristotle sometimes relaxes this condition on the sciences is controversial. Cf. *APo*. 1.13, 79a13-16, on the theorems of geometry turning up in explanation of why circular wounds take longer to heal. I thank Lindsay Judson for pointing this out to me. For a more detailed discussion of Aristotle’s theory of the subordinate sciences, cf. Distelzweig (2013) and Peramatzis (2011, 64-70).

³⁴ *APo* 1.7, 75b3-6. Cf. *Cat.* 6, 4b22-24.

³⁵ Ross (1961, 14) notes the problem, but offers no solution.

³⁶ For example, Hicks (1907, 179-80), who, on the basis of an overly broad reference to *APo* 2.3-7, claims that the assumption of a universal method for discovering the what-it-is ‘proves to be without foundation’, a conclusion repeated by Tricot (2010, 21). Hicks suggests that the only possibility left is induction, which is also the view of Rodier (1900, 10), although the latter also thinks that dialectic has a role (cf. n. 38 *infra*). However, Hicks’ justification rests upon what Barnes (1994, 218) calls the ‘ancient error’ of identifying the *illegitimate* method of proving definitions, labeled by

The former method characteristically begins by enumerating particular instances of similar phenomena, usually sensory phenomena (e.g. ‘*These Xs are Fs*’), and then generalises universal premises on the basis of this enumeration (e.g. ‘*All Xs are Fs*’) which can be used in the construction of definitions.³⁸

The latter method begins from certain opinions – called by Aristotle *ἔνδοξα* – which are held to be reputable either by the many or the wise, and then attempts to test whether these opinions are consistent with other endoxic opinions.³⁹ Although Aristotle is not clear on the matter, presumably, a definition which is consistent with the most number of endoxic opinions, and which cannot be defeated by any dialectical *topoi*, will be considered a ‘good’ definition in dialectical contexts.

This latter possibility finds most of its support from the *Topics*. There, Aristotle claims that dialectic is useful to the philosophical sciences (κατὰ φιλοσοφίαν

Aristotle as a λογικὸς συλλογισμὸς (*APr* 2.7, 93a15), with Aristotle’s own *legitimate* method of forming a definition of the ‘what-it-is’ from the repositioned terms of a causal demonstration (discussed at *APo* 2.8, 93b15-20). That Aristotle uses this latter method in *De Anima* is affirmed by Johansen (2012, 10), who argues that, in *DA* 2-3, Aristotle ‘follows the method of identifying the essential features of the soul through those features which will explain its other necessary attributes.’ Here, I make the further claim that Aristotle first uses this method in *DA* 1.2-5 to ‘test’ the explanations of soul phenomena provided by his predecessors.

³⁷ For example, Irwin (1988, 280-82), who claims that Aristotle’s dialectical method in *DA* 1 seeks to discover coherence amongst his predecessors’ views of soul. However, Irwin concludes that no such coherence exists, and that for this reason, Aristotle is forced to resolve the central puzzles of *DA* 1 by what he terms ‘strong dialectic’.

³⁸ *APr* 2.23, 68b15-37; *APo* 1.18, 81a38-b9; *APo* 2.19, 100b3-4.

³⁹ Cf. *Top.* 1.1, 100a30. So Rodier (1900, 43): « Il est impossible, avons-nous dit [...] d’établir par la démonstration les définitions qui servent de principes propres à chaque science, et c’est précisément ce qui rend nécessaires les introductions dialectiques où ces principes sont examinés ἐκ τῶν ἐνδόξων. » This view is ultimately based upon an interpretation of *NE* 7.1, 1145b2-7, first put forward by Owen (1961), and Mansion (1961a), and developed by Evans (1977), Nussbaum (1982), Irwin (1987) and (1988), and Włodarczyk (2000), among others. However, the interpretation of *NE* 7.1 as providing evidence of a universal method of investigation is criticised by Shields (2013).

ἐπιστήμας),⁴⁰ that its problems (προβλήματα) lead to truth and knowledge (πρὸς ἀλήθειαν καὶ γνῶσιν),⁴¹ and most importantly, that it is useful for discoursing about the primary things or principles of each science (πρὸς τὰ πρῶτα τῶν περὶ ἐκάστην ἐπιστήμην).⁴²

However, despite this evidence, there are good reasons for thinking that neither of these methods is Aristotle's preferred way of discovering the soul's essential definition. On the one hand, Aristotle explicitly rules out the method of induction as sufficient for establishing essential definitions in *APo* 2.7. He claims in this chapter that induction can at most show *that* certain facts obtain (ὅτι ἢ ἔστιν ἢ οὐκ ἔστιν), but not *what* something is (τί ἐστι), which is the content of an essential definition.⁴³

On the other hand, the forms of dialectic – at least, those which are codified by the *Topics* and the *Sophistical Refutations* – also seem to be ruled out. The reason for this is that, even when Aristotle is engaged in a critique of his predecessors' opinions, he often appeals to non-endoxic empirical and scientific premises in order to construct refutations of their views.⁴⁴ However, since the dialectical method is restricted to using only premises which are reputable or commonly believed,⁴⁵ Aristotle cannot refute his opponents with his own scientific premises without breaking the rules of dialectical engagement.

⁴⁰ *Top.* 1.2, 101a26.

⁴¹ *Top.* 1.11, 104b1.

⁴² *Top.* 1.2, 101a36-37.

⁴³ *APo* 2.7, 92a37-92b1.

⁴⁴ For example: *DA* 1.1, 406a3-4; *DA* 1.1, 406a12-13; *DA* 1.3, 407b17-19; *DA* 1.4, 409a9-10. Pace Polansky (2007, 83), who argues: 'All the criticisms of predecessors [in *DA* 1] will be *dialectical*. Aristotle cannot simply demonstrably refute the *endoxa* but only argue against them on the basis of other *endoxa*. Dialectic lacks firm starting points, instead using some *endoxa* to challenge others.'

⁴⁵ *Top.* 1.1, 100b21-23. Cf. Bolton (1987), and Reeve (2012).

Further, when Aristotle comes to review the psychological theories of his predecessors, he does not, as is commonly implied,⁴⁶ claim to begin his investigation with a discussion of the ἔνδοξα, a term which is absent from *De Anima*. Instead, he claims to begin by laying out (προτίθημι) the attributes that seem most of all to belong to the soul by nature (τὰ μάλιστα δοκοῦνθ' ὑπάρχειν αὐτῇ κατὰ φύσιν),⁴⁷ namely, perception and motion.⁴⁸

Although Aristotle does present his predecessors as believing that these attributes belong to the soul, he does not claim that we should discuss these attributes during the course of psychological inquiry *because* such views are endoxic. Finally, and most tellingly, none of the predecessors' definitions of soul are claimed by Aristotle to be opinions which need to be preserved or 'saved' in the way that *NE* 7.1 suggests. Instead, as I will show, Aristotle explicitly gives to his predecessors' definitions of soul an unusual status which hovers *between* scientific and dialectical definition.

1.3 *Aristotle's Partial Solution to the Methodological Challenge*

Before I discuss Aristotle's full solution to the Methodological Challenge in the *De Anima*, it is important to note that Aristotle seems to provide a partial solution to it in the *Prior Analytics*. In respect of question (A), the proper method by which to investigate what something is, Aristotle argues:

So the method (ὁδός) in respect of all subjects is the same, even in philosophy and whatever art and discipline; for it is necessary to inspect the attributes (τὰ ὑπάρχοντα) and the things to which they belong (οἷς ὑπάρχει) in respect of

⁴⁶ For example, by Witt (1999, 170-71).

⁴⁷ *DA* 1.2, 403b24-25.

⁴⁸ Bolton (1987, 128) rightly notes that, according to *Top.* 1.1, 100b21-4, ἔνδοξα are only a sub-class of τὰ δοκοῦντα, a term which refers broadly to things which appear to us (e.g. through perception).

both of our terms [sc. representing subject and attribute], and supply ourselves with as many propositions as we can, and we must investigate these propositions by means of the three terms [sc. of the syllogism], establishing proofs in this way, and refuting in that way – proceeding according to truth, if the terms have been arranged so as to belong truly, but towards dialectical syllogisms (διαλεκτικούς συλλογισμούς) if the terms are from propositions which accord with opinion (ἐκ τῶν κατὰ δόξαν προτάσεων). (*APr* 1.30, 46a3-10)⁴⁹

In respect of question (B) – what starting points or premises we must begin from – in the same passage, Aristotle continues:

But most of the principles are peculiar (ἴδιαι) to each science. For this reason, it is from experience (ἐμπειρίας) that the principles for each science are provided; I mean, astronomical experience provides the principles of astronomical science (ἐπιστήμης); for when the phenomena (φαινομένων) have been sufficiently grasped (ληφθέντων), then the astronomical demonstrations (ἀποδείξεις) were discovered. This holds similarly of any art or science in general. So that, if the attributes (τὰ ὑπάρχοντα) belonging to each subject are grasped, we will already be prepared to exhibit the demonstrations. For if none of the attributes which truly belong (ἀληθῶς ὑπαρχόντων) to the things are left out by the inquiry (ἱστορίαν), we will be in a state (ἔξομεν) to discover the demonstrations of whatever can be demonstrated, and to make apparent (ποιεῖν φανερόν) the things of which there is by nature no demonstration. (*APr* 1.30, 46a17-27)⁵⁰

⁴⁹ Ἡ μὲν οὖν ὁδὸς κατὰ πάντων ἢ αὐτὴ καὶ περὶ φιλοσοφίαν καὶ περὶ τέχνην ὅποιοι οὖν καὶ μάθημα· δεῖ γὰρ τὰ ὑπάρχοντα καὶ οἷς ὑπάρχει περὶ ἑκάτερον ἀθρεῖν, καὶ τούτων ὡς πλείστων εὐπορεῖν, καὶ ταῦτα διὰ τῶν τριῶν ὅρων σκοπεῖν, ἀνασκευάζοντα μὲν ὥδι, κατασκευάζοντα δὲ ὥδι, κατὰ μὲν ἀλήθειαν ἐκ τῶν κατ' ἀλήθειαν διαγεγραμμένων ὑπάρχειν, εἰς δὲ τοὺς διαλεκτικούς συλλογισμούς ἐκ τῶν κατὰ δόξαν προτάσεων.

⁵⁰ Ἰδία δὲ καθ' ἑκάστην αἰ πλείσται. διὸ τὰς μὲν ἀρχὰς τὰς περὶ ἕκαστον ἐμπειρίας ἐστὶ παραδοῦναι, λέγω δ' οἷον τὴν ἀστρολογικὴν μὲν ἐμπειρίαν τῆς ἀστρολογικῆς ἐπιστήμης (ληφθέντων γὰρ ἱκανῶς τῶν φαινομένων οὕτως εὐρέθησαν αἱ ἀστρολογικαὶ ἀποδείξεις), ὁμοίως δὲ καὶ περὶ ἄλλην ὅποιοι οὖν ἔχει τέχνην τε καὶ ἐπιστήμην· ὥστ' ἐὰν ληφθῇ τὰ ὑπάρχοντα περὶ ἕκαστον, ἡμέτερον ἤδη τὰς ἀποδείξεις ἐτοίμως ἐμφανίζεσθαι. εἰ γὰρ μὴδὲν κατὰ τὴν ἱστορίαν παραλειφθεῖ τῶν ἀληθῶς ὑπαρχόντων τοῖς πράγμασιν, ἔξομεν περὶ ἅπαντος οὗ μὲν ἔστιν ἀπόδειξις, ταύτην εὐρεῖν καὶ ἀποδεικνύειν, οὗ δὲ μὴ πέφυκεν ἀπόδειξις, τοῦτο ποιεῖν φανερόν.

From these passages, it can be seen that scholars who hold that induction is the key to Aristotle's solution to questions (A) and (B) are partially correct,⁵¹ insofar as inductive knowledge can be constructed from the collected experiences referred to above, and insofar as induction can provide us with the particular starting points or premises asked for by (B).⁵²

However, the method of induction cannot be the right answer to question (A), for the principles that Aristotle is referring to in the above passage are *not* the ultimate definitions of a given science (for example, the essential definition of 'star', or 'soul'). If they were, Aristotle would be advocating a dismal theory, as it would imply that there is in fact no philosophical work for an inquirer to do at all: one would just go around observing, and all the relevant definitions would eventually pop into one's head.

Instead, the principles that Aristotle is referring to in *APr* 1.30 are propositions about the *preliminary phenomena* that we collect about a subject we are investigating. These are propositions about τὰ ὑπάρχοντα or attributes belonging to a particular subject of the sort: 'X is/appears to belong to F', or 'F is/appears to belong to G'.⁵³ Such principles only establish *that* certain facts falling under the domain of a developing science hold, not *why* such facts hold. Elsewhere, Aristotle will call this sort of first principle the principle of 'the fact that' (ἀρχὴ γὰρ τὸ ὅτι).⁵⁴ Thus, although

⁵¹ Irwin (1987, 132 n.15) interprets this passage as applying only to empirical inquiry, and argues: 'DA 402a4 mentions *historia* about the soul; but Aristotle does not imply [...] that the DA itself is a work of *historia*. The term is not applied to a survey of dialectical *endoxa* or to a dialectical discussion.' However, as I mentioned above, Aristotle does not claim to treat his predecessors' views as *endoxa*, even though their opinions *could* technically be classed as *endoxa*.

⁵² *APo* 2.19, 100a3-9; *Metaph.* A.1, 980b25-982a3.

⁵³ *APr* 1.30, 46a5.

⁵⁴ *NE* 1.4, 1095b7.

some principles can be provided by experience, these sorts of principles stand in need of further explanation, and cannot serve as scientific definitions.⁵⁵

Thus, at most, these passages from the *Prior Analytics* answer question (B), the question of how we come to grasp the starting points or basic facts that a developing science needs to explain. In the case of soul, Aristotle has already suggested what some of these facts are. They will include, for example, that soul is a sort of natural principle (of motion and rest) in animals,⁵⁶ and that certain affections belong to animals because of their having a soul.⁵⁷

These passages from the *Prior Analytics* do not, however, give us an answer to question (A), which asks after the method by which the essential definitions of a science are to be obtained. Instead, in *APr* 1.30, Aristotle merely asserts that the collection of an unorganised set of facts about the phenomena in a given domain puts us in an epistemic state conducive to exhibiting demonstrations. Yet, how does Aristotle conceive of the relation between this epistemic state, and the finding out of the what-it-is or definition of an entity such as soul?

1.4 Aristotle's Full Solution to the Methodological Challenge

Aristotle's full solution to the methodological challenge is found in the *Posterior Analytics*.⁵⁸ In this work, Aristotle argues that the things that can be inquired after are four in number: *that* some fact obtains (or not) (τὸ ὅτι), *why* some fact is (τὸ διότι), *if* something exists (εἰ ἔστι), and *what* something is (τί ἐστίν).⁵⁹ Roughly speaking, Aristotle thinks that once an inquirer knows whether something

⁵⁵ I take it as correct that such facts fall under what Ferejohn (1991, 60) labels the 'pre-syllogistic framing stage' of a science. Cf. McKirahan (1992, 212-13).

⁵⁶ *DA* 1.1, 402a6-7.

⁵⁷ *DA* 1.1, 402a9-10.

⁵⁸ Cf. Bolton (1991).

⁵⁹ *APo* 2.1, 89b23-25. Cf. Charles (2002).

exists, and has collected – through observation, experience, and induction – certain facts about that thing, for example, that (ὅτι) ‘*Xs are Fs*’, one can go on to inquire into the reason *why* (διότι) the property *F* belongs to that class of things. Aristotle thinks that, once we are in a position to know the cause or explanation of *why X is F*, we are then in a position to: (a) to provide an explanation of the fact *that X is F* and (b) to formulate a definition of *X* based upon that explanation.

Aristotle gives a few schematic examples of how this works in *APo* 2.8. For my purposes, I will limit myself to discussing Aristotle’s example of how one arrives at an essential definition of thunder.⁶⁰ Aristotle begins by giving an example of a fact drawn from experience: ‘Thunder is a noise in the clouds’. This, Aristotle thinks, is a kind of definition, insofar as it grasps *something* of the what-it-is of thunder, but not its essential or scientific definition.⁶¹ However, in order to find the scientific definition of thunder, Aristotle argues, one must discover a middle term which gives the reason why (διὰ τί) there is noise in the clouds.

To do this, one must look amongst the known facts one has collected from experience to find propositions which contain a middle term connected to the phenomenon ‘noise in the clouds’, i.e. the type of rumbling sound in the clouds one might hear during storms. If one finds such propositions, e.g. ‘quenching of fire belongs to cloud’, and ‘noise belongs to quenching of fire’, one can then begin to construct an explanation of *why* it thunders. Aristotle argues:

⁶⁰ It is beyond the scope of this chapter to discuss all of the difficulties and interpretations of the relationship between demonstration and definition. Broadly speaking, I follow Bolton’s (1987) analysis. For an introduction, cf. Ackrill (1981). The essential readings are Chiba (2012); Charles (2002); Goldin (1996, especially 101-136); McKirahan (1992); Ferejohn (1991) and Landor (1981).

⁶¹ *APo* 2.8, 93a21-24. In fact, the third kind of three kinds of definition, discussed at *APo* 2.10, 94a11-14. Cf. Bolton (1987, 143-46).

What is (τί ἐστι) thunder? A quenching of fire in the clouds. Why (διὰ τί) does it thunder? On account of (διὰ) fire being quenched in the clouds. Let ‘cloud’ = *G*, ‘thunder’ = *A*, and ‘quenching of fire’ = *B*. *B* exists in *G*, cloud (because the quenching of fire is *in* cloud). *A*, noise exists in *B*. And *B* is the account of the first extreme, *A*. (*APo* 2.8, 93b8-12)⁶²

For my purposes, the most important aspect of this passage is that it shows that the phenomenon which we *start with* in order to investigate what something is (‘Thunder is a noise in the clouds’) eventually figures as the *conclusion* of a demonstrative syllogism once an explanatory middle term is found.⁶³ This can be seen more readily once the argument is laid out in syllogistic form:

1. Noise belongs to quenching of fire.
2. Quenching of fire belongs to the cloud.
3. Thunder/Noise belongs to the cloud.

Aristotle claims that if this sort of demonstration contains the correct *explanans* (here, ‘quenching of fire’) then it is a sort of demonstration of the what-it-is (here, of ‘thunder’). Further, such a definition of the what-it-is differs from a demonstration only in the position of its terms.⁶⁴ The different position of the terms of a definition is simply: ‘Thunder is a noise belonging to a quenching of fire in the clouds’.

Thus, Aristotle’s final position on the matter of ‘demonstrating a definition’ is that, whilst it is true that there is not a syllogism or demonstration which has *as its conclusion* a definition of the what-it-is, nevertheless, the what-it-is becomes clear

⁶² τί ἐστι βροντή; πυρὸς ἀπόσβεσις ἐν νέφει. διὰ τί βροντᾷ; διὰ τὸ ἀποσβέννυσθαι τὸ πῦρ ἐν τῷ νέφει. νέφος Γ, βροντή Α, ἀπόσβεσις πυρὸς τὸ Β. τῷ δὲ Γ τῷ νέφει ὑπάρχει τὸ Β (ἀποσβέννυται γὰρ ἐν αὐτῷ τὸ πῦρ), τούτῳ δὲ τὸ Α, ψόφος· καὶ ἐστι γε λόγος τὸ Β τοῦ Α τοῦ πρώτου ἄκρου.

⁶³ Rightly seen by Bolton (1987), Landor (1981), and Goldin (1996, 124-25), among others.

⁶⁴ *APo* 2.10, 93b38-94a5.

through a demonstration which correctly posits (through a middle term) what caused the initial phenomenon being investigated.⁶⁵

In sum, Aristotle thinks that, in seeking to define some objects, one can begin from certain apparent *facts*, and then arrange those facts in such a way as to find out which elements of those facts are able to serve as explanatory middle terms of other facts that we are inquiring after.⁶⁶ Once the most fundamental terms or principles are discovered, these principles should be able to operate as *explanantia* of the lower-level phenomena that one began with. This collection, arrangement, and rearrangement of propositions about a subject under scientific investigation, conducted with the aim of constructing and testing the explanatory power of proposed definitions of this subject, I shall call Aristotle's method of *scientific inquiry*.⁶⁷

1.5 *The Method of Scientific Inquiry in De Anima*

In the following chapters, I shall defend the thesis that it is the method of scientific inquiry which Aristotle promotes as the solution to the methodological challenge for finding out the soul's definition and attributes. Just as importantly, I shall argue that he relies upon this method, and not the method of induction (alone) or dialectic, in testing out the adequacy of his predecessors' theories of soul.

The difficulty of recognising the method of scientific inquiry as Aristotle's solution to the Methodological Challenge is that, before he explicitly claims it to be

⁶⁵ *APo* 2.8, 93b15-20.0

⁶⁶ Cf. McKirahan (1992, 212-13).

⁶⁷ I take this to be equivalent to what Chiba (2012) calls 'heuristic demonstrative inquiry'. The latter method may also be seen as equivalent to what Freeland (1990, 90) calls Aristotle's 'abductive' method, which 'involves arguing from explanatory success to the truth of a scientific theory.' If abduction must begin from relevant phenomena or facts, and then find a causal middle term which explains those phenomena 'successfully', then these methods are equivalent.

so, he launches into a difficult and complex series of puzzles which he thinks a psychological science should solve.⁶⁸

However, a close analysis of the logic of Aristotle's argument shows that, after presenting these intervening puzzles, he once again picks up the thread of the Methodological Challenge at *DA* 1.1, 402b16, and gives a determinate solution to it,⁶⁹ as the ancient commentators recognised.⁷⁰ He argues:

But (i) it seems that not only is it useful to know (γινῶναι) the what-it-is in order to gain theoretical insight into the causes (τὸ θεωρῆσαι τὰς αἰτίας) of the demonstrable attributes (συμβεβηκότων) in the essences (οὐσίαις) – (ii) just as in the mathematical sciences, what the straight and what the curved is, or what the line and what the geometrical surface is, is useful for discerning [sc. the demonstrable attribute of] how many right angles the angles of the triangle are equal to,⁷¹ but also conversely, (iii) the demonstrable attributes contribute in great part to the knowledge (τὸ εἰδέναι) of the what-it-is; for (iv) whenever we are in a state such as to give a definition (ἔχωμεν ἀποδιδόναι)⁷² which accords with how the demonstrable attributes appear to us (κατὰ τὴν φαντασίαν),⁷³

⁶⁸ *DA* 1.1, 402a23-b16. Whilst the first of these puzzles does seem to be a methodological suggestion about how one might proceed, I shall argue that it is rejected at *DA* 1.1, 402b16-17.

⁶⁹ This line is logically connected back to *DA* 1.1, 402a22. Aristotle's claim here is not connected to the question posed at 402b14-16, of whether we ought first to investigate the objects which the powers of soul are correlated with, or the powers themselves. This is a place where Burnyeat's (2002, 53) question of 'how to read an Aristotelian chapter' seems particularly appropriate.

⁷⁰ Cf. Philop. *In de anima*, 40.7-41.10. Although he does not give Aristotle's method a label, he gives as examples of its use Aristotle's procedure in the *Physics* for defining place, the infinite, the void, and time, and in the *Meteorology*, a hailstorm. Themist. (*Paraphrasis in de anima*, 2.20) labels Aristotle's method σύνθεσις, by which he means an act of the intellect which judges properties as necessarily belonging to a subject (τὸ ὑπάρχον τῷ πράγματι ὡς ὑπάρχον), e.g. 'Snow is white' (109.26-110.4).

⁷¹ Cf. McKirahan (1992, 72): 'The definition of a circle as the locus of points equidistant from a given point can be used to infer from the fact that A and B are points on a circle with center C that AC=BC.'

⁷² The meaning of ἔχειν here must refer to an epistemic state, on analogy to *APo* 2.8, 93a28-29, and *APr* 1.30, 46a17-27, each of which exhibits this epistemic sense of how we 'hold' in relation to an object of knowledge. Cf. Bolton (1987, 132 n.26)

⁷³ Here, I follow Hicks (1907, 192), who, adopting the suggestion of Bonitz, reads φαντασία as bearing the meaning 'κατὰ τοῦτο ὃ φαίνεται'. The precedent for such a reading can be found by comparing *DA* 3.3, 428b3 and *Insomn.* 2, 460b18. Even so, I take it that this reading is consistent with Aristotle's more technical idea that appearances occur *in* φαντασία (i.e. as a representation in the soul), as Frede (1992,

either all them or most of them, then we shall be able to speak most correctly (κάλλιστα) about the essence (οὐσίας); for (iv) the first principle of demonstration is the what-it-is; (v) so in respect of those definitions (ὀρισμῶν) which neither result in our coming to know (γνωρίζειν) the demonstrable attributes, nor easily produce a likely guess (εἰκάσαι) about them, it is clear that they all have been spoken dialectically (διαλεκτικῶς) and emptily (κενῶς). (DA 1.1, 402b16-403a2)⁷⁴

The difficulty in solving the Methodological Challenge, Aristotle now reveals, is the mistaken assumption that one must first give a generic answer to the question, ‘what is the soul?’ before one can begin psychological inquiry into its essence and nature – a version of Meno’s paradox.⁷⁵ For this reason, Aristotle’s initial suggestion at 402a23-24, that we should perhaps (ἴσως) first locate what the genus of soul is and the what-it-is, turns out to be wrong. Aristotle now claims that we can arrive at the knowledge of what something is or its proper genus *via* the *appearances* of its demonstrable attributes.⁷⁶

However, what is this method? It is clearly not the method of dialectic, as the test that Aristotle advances for seeing whether or not a given definition facilitates

286) argues. On the variety of ways Aristotle understands this faculty, cf. Schofield (1992).

⁷⁴ ἔοικε δ’ οὐ μόνον τὸ τί ἐστὶ γινῶναι χρήσιμον εἶναι πρὸς τὸ θεωρῆσαι τὰς αἰτίας τῶν συμβεβηκότων ταῖς οὐσίαις (ὥσπερ ἐν τοῖς μαθήμασι τί τὸ εὐθὺ καὶ τὸ καμπύλον, ἢ τί γραμμὴ καὶ ἐπίπεδον, πρὸς τὸ κατιδεῖν πόσαις ὀρθαῖς αἱ τοῦ τριγώνου γωνίαι ἴσαι), ἀλλὰ καὶ ἀνάπαλιν τὰ συμβεβηκότα συμβάλλεται μέγα μέρος πρὸς τὸ εἰδέναι τὸ τί ἐστίν· ἐπειδὴν γὰρ ἔχωμεν ἀποδιδόναι κατὰ τὴν φαντασίαν περὶ τῶν συμβεβηκότων, ἢ πάντων ἢ τῶν πλείστων, τότε καὶ περὶ τῆς οὐσίας ἔξομεν λέγειν κάλλιστα· πάσης γὰρ ἀποδείξεως ἀρχὴ τὸ τί ἐστίν, ὥστε καθ’ ὅσους τῶν ὀρισμῶν μὴ συμβαίνει τὰ συμβεβηκότα γνωρίζειν, ἀλλὰ μὴδ’ εἰκάσαι περὶ αὐτῶν εὐμαρές, δῆλον ὅτι διαλεκτικῶς εἴρηται καὶ κενῶς ἅπαντες.

⁷⁵ Cf. Ferejohn (1988), and Burnyeat (1981).

⁷⁶ *Pace* Polansky (2007, 49), who thinks that this passage does not represent a shift in procedure whereby we first investigate accidents. Rodier (1900, 22-24), however, does recognise this passage as representing a procedural solution to the Methodological Challenge, but thinks that this procedure is « non pas pour découvrir, mais pour contrôler les définitions découvertes par l’induction, la sensation ou l’expérience. » In other words, he thinks that induction, perception, and sensation provide the attributes of a given thing, but not its essential attributes or definition, which must be obtained in a different way which he does not specify.

knowledge of the demonstrable attributes of an entity forms no part of the method of dialectic as described by the *Topics* or the *Sophistical Refutations*.⁷⁷ In fact, it is easy to see why not. In the *Topics*, because one agrees at the outset to use only endoxic premises and definitions in the construction of syllogisms, no such definitions or demonstrations will be able to test out *whether* the results of a dialectical syllogism or definition are scientifically true.⁷⁸ At most, dialectic will be able to test out the validity of certain deductions, but not their soundness. However, the method which Aristotle recommends here is a procedure which tests out *whether* a definition is scientific or said ‘dialectically and emptily’.

As I suggested above, this method appears to be none other than the method of scientific inquiry set forth in the *Prior* and *Posterior Analytics*. If so, then Aristotle is claiming that the proper method for conducting an investigation into the definition of the soul and its attributes is to (1) posit certain statements of fact (or apparent fact) about the soul’s attributes, such as, ‘All soul ϕ s’, then, (2) collect or construct other relevant propositions or definitions *from* which that claim can be derived or ‘explained’, and then (3) attempt to derive – in demonstrative fashion – the facts that one began with, just as Aristotle advocates we do in the case of thunder in the *Posterior Analytics*.⁷⁹

⁷⁷ Cf. Bolton (1987, 147-148): ‘In the *Analytics* all three types of definition are themselves *defined* by reference to their role in such explanations [of demonstrative attributes], while in the *Topics* it is not the basis even for a single line of argument (*topos*) by reference to which one can test the adequacy of the proposed definition.’

⁷⁸ Pace McKirahan (1992, 260), who assigns to dialectic the role of determining the truth or falsity of endoxic propositions as a preparation for determining scientific truths. However, he gives no reason to assign this role to dialectic, as opposed to scientific inquiry.

⁷⁹ Cf. Freeland (1990, 70 n.7): ‘[...] the particular way in which Aristotle tests the *endoxa* against empirical *phainomena* in [the *Meteorology*] is not envisaged by the *Topics*; it goes beyond even Bolton’s characterization of how dialectic (in particular “*peirastic*”) can help to supply empirically adequate explanations.’

If Aristotle's method for discovering the definition of soul is the method of scientific inquiry, as I have argued above, then we should expect Aristotle to begin his investigation in *DA* 1 by laying out certain basic facts about the soul, and from there, go on to advance further definitions or propositions which contain middle terms, or at least explanatory claims, which attempt to ground those preliminary facts.

We are not disappointed in this expectation. At the beginning of *DA* 1.2, Aristotle writes:

In investigating the soul it is necessary to go through the puzzles which must be solved as we proceed, and at the same time, to take into account the earlier opinions (δόξας) of as many of those who have stated something about soul, so that we may adopt what has been said correctly (καλῶς), and avoid what has not been said correctly. But the starting point (ἀρχή) of the investigation (ζητήσεως) is to lay out the attributes which appear to belong most of all to the soul by nature (τὰ μάλιστα δοκοῦνθ' ὑπάρχειν αὐτῇ κατὰ φύσιν). Animate things appear to differ most of all from inanimate things in two ways, both by motion (κινήσει) and in perceiving (αἰσθάνεσθαι). We have taken over from our predecessors roughly these same two attributes concerning the soul. (*DA* 1.2, 403b20-28)⁸⁰

It is clear that Aristotle proposes to begin exactly as I have outlined. In fulfilment of step (1), he claims that motion and perception (in the sense of the ability to cause motion and perception in animate things) belong to the soul by nature. In fulfilment of step (2), he claims that we should gather statements from the predecessors, which are claimed by Aristotle to be possibly true and correct

⁸⁰ Ἐπισκοποῦντας δὲ περὶ ψυχῆς ἀναγκαῖον, ἅμα διαποροῦντας περὶ ὧν εὐπορεῖν δεῖ προελθόντας, τὰς τῶν προτέρων δόξας συμπαραλαμβάνειν ὅσοι τι περὶ αὐτῆς ἀπεφάναντο, ὅπως τὰ μὲν καλῶς εἰρημένα λάβωμεν, εἰ δέ τι μὴ καλῶς, τοῦτ' εὐλαβηθῶμεν. ἀρχὴ δὲ τῆς ζητήσεως προθέσθαι τὰ μάλιστα δοκοῦνθ' ὑπάρχειν αὐτῇ κατὰ φύσιν. τὸ ἔμψυχον δὲ τοῦ ἀψύχου δυσὶ μάλιστα διαφέρειν δοκεῖ, κινήσει τε καὶ τῷ αἰσθάνεσθαι. παρειλήφαμεν δὲ καὶ παρὰ τῶν προγενεστέρων σχεδὸν δύο ταῦτα περὶ ψυχῆς.

statements about the soul.⁸¹ Below, I shall show that Aristotle's critique of the predecessors in *DA* 1.3-5, represents a fulfilment of step (3).

Aristotle's reason for operating with the predecessors in this way, it seems, is that their theories of soul provide for him a selection of premises which may contain true first principles or definitions from which the soul's attributes can be scientifically demonstrated. Moreover, even if the predecessors have not offered a full definition of soul, if their first principles can be used as middle terms in demonstrations of basic psychological phenomena, then by repositioning the terms of such demonstrations, the soul's essential definition can still be discovered.

That the scientific method of inquiry – which consists in the collection, arranging, rearranging, and testing out of the various explanations of the soul's demonstrable attributes – is Aristotle's preferred way of investigating the soul should not be surprising, for it seems to be (structurally at least) the same method of inquiry that Aristotle follows in other scientific works. In recent years, scholars have recognised that such a demonstrative structure can be found in a number of Aristotle's scientific works, such as the *Parts of Animals*, the *Generation of Animals*, and the *Meteorology*, even if this structure does not strictly fulfil (what are traditionally viewed as) the requirements of Aristotelian syllogistic (e.g. strict necessity).⁸²

In *PA* 1.1, for instance, Aristotle raises a version of the methodological challenge explored above. Just as he does in *DA* 1.1, in *PA* 1.1, Aristotle solves this

⁸¹ Cf. Freeland (1990, 76).

⁸² This demonstrative-explanatory structure has been recognised in the *Parts of Animals* by Lennox (1987) and Gotthelf (1987), in the *Generation of Animals* by Bolton (1987), and in the *Meteorology* by Freeland (1997). More recently, Leunissen (2010, 33) similarly argues: 'Aristotle may not have a monolithic and unified theory of demonstration, but there are also no *radical* breaks between Aristotle's "original" model of demonstration in the *Posterior Analytics* and the ones employed in the biological works, in part because [...] that original model itself is more flexible and complex than has traditionally been acknowledged.'

puzzle by appeal to the scientific method of inquiry: he asks whether the physicist should follow the method of the mathematicians who construct astronomical proofs by first setting out the phenomena (τὰ φαινόμενα), and then advance the reason for (τὸ διὰ τί) and the causes (αἰτίας) of those phenomena.⁸³ Aristotle's answer is 'Yes'.⁸⁴

1.6 *The Method of Scientific Inquiry and the Predecessors*

That this solution to the Methodological Challenge is correct finds further confirmation in the fact that, when Aristotle comes to give an overview of his predecessors' theories of soul in *DA* 1.2, he does not merely report *what* they thought soul to be. Instead, he portrays them as having offered explanations, ultimately leading back to theoretical first principles, of the attributes that are granted by all parties to belong to the soul by nature.⁸⁵ This is why Aristotle is able to use the theories of his predecessors as material for step (3) of his method of scientific inquiry.

The most important evidence that Aristotle provides to show that he is concerned to represent his predecessors as having offered claims about the soul which are meant to be explanatory of psychological phenomena is the way he classifies their definitions of soul. Near the end of *DA* 1.2, when Aristotle comes to give an overview of how all the predecessors defined (ὀρίζονται) the soul, he claims that the predecessors referred each of the three attributes by which they defined soul – motion, perception, incorporeality – back to certain first principles (τούτων δ' ἕκαστον

⁸³ *PA* 1.1, 639b3-10.

⁸⁴ *PA* 1.1, 640a13-15. At *PA* 1.5, 645a36-b3, the phenomena are identified with the demonstrable attributes (τὰ συμβεβηκότα) and parts of animals. Cf. Lennox (1994).

⁸⁵ Cf. Hankinson (1998, 50).

ἀνάγεται πρὸς τὰς ἀρχάς),⁸⁶ whether one or many,⁸⁷ or whether corporeal, incorporeal, or mixed.⁸⁸

Importantly, Aristotle does not mean by these claims that the predecessors simply defined soul as, for example, ‘that which perceives’, before going on to incorporate this definition of soul into their system of philosophy generally. Rather, Aristotle takes his predecessors to have attempted to explain the attributes by which they defined soul (e.g. being able to perceive), by grounding these attributes in the first principles they adopted. In effect, he treats his predecessors as engaged in the same project of scientific inquiry that he is engaged in.⁸⁹

An example of the sort of explanatory reasoning that Aristotle ascribes to the predecessors can be found in his very first description of why certain ones of them claimed the soul to belong to the class of moving objects. Aristotle writes:

For some of them say that (i) the soul is what most of all and primarily is a mover; and (ii) having supposed (οἰηθέντες) that what is not itself in motion is not capable of moving something else, (iii) they inferred (ὕπελαβον) that the soul is something among the class of things in motion. (DA 1.2, 403b28-31)⁹⁰

In this opening remark, Aristotle presents premise (i) as a phenomenon linked to the soul’s ability to move living beings, premise (ii) as a principle which was believed by

⁸⁶ DA 1.2, 405b11-13.

⁸⁷ DA 1.2, 405a2.

⁸⁸ DA 1.2, 404b30-405a2.

⁸⁹ Cf. Hussey (2012, 17), who argues that Aristotle treats nearly all of the philosophers discussed in *Metaph.* A, including Thales, Anaximander, Anaximenes, Heraclitus, Empedocles, Anaxagoras, and Leucippus and Democritus, as ‘exemplary pioneers and valuable partners in the enterprise of “natural philosophy”.’

⁹⁰ φασὶ γὰρ ἔνιοι καὶ μάλιστα καὶ πρῶτως ψυχὴν εἶναι τὸ κινεῖν, οἰηθέντες δὲ τὸ μὴ κινούμενον αὐτὸ μὴ ἐνδέχεσθαι κινεῖν ἕτερον, τῶν κινουμένων τι τὴν ψυχὴν ὕπελαβον εἶναι.

his predecessors, and (iii) as an inference that the soul is amongst the class of moving things.⁹¹

From this set of premises, we can see that Aristotle is here representing his predecessors as reasoning in the following way:

1. No *X* that is not in motion is capable of moving any *Y*. (ii)
2. Every soul is capable of moving some *Y*. (i)
3. Thus, soul is in motion. (iii)

This ascription of an explanatory chain of reasoning to the predecessors is not isolated. In fact, the majority of the predecessors treated by Aristotle in *DA* 1.2 are represented as at least having tried to offer explanatory demonstrations of the soul's attributes, and especially its ability to cause motion and perception. For instance, Aristotle represents Democritus as having defined the soul as a type of fire *because* (διὰ) fire atoms, *qua* spherical and highly mobile, are most of all able to slip into the body of animals and cause the atoms which compose the animal body to move.⁹²

Similarly, when Aristotle discusses the theories of those who held the soul to be responsible for perception and knowledge, he ascribes to Plato the deduction that, because 'like cognises like', and because the things we in fact know are composed of the first principles, the soul must also be composed of the first principles.⁹³ Again, when Aristotle reports Xenocrates' unusual definition of the soul as a 'number which

⁹¹ Similarly, in *DA* 1.2, 404a24-25, Aristotle claims that the principle that 'only things in motion cause motion' came to be held inductively by all of those who held the soul to be something that moved other things, because these theorists had never seen anything causing motion which was not itself in motion (τὸ μηθὲν ὁρᾶν κινεῖν ὃ μὴ καὶ αὐτὸ κινεῖται).

⁹² *DA* 1.2, 404a5-9.

⁹³ *DA* 1.2, 404b16-18.

moves itself" (ἀριθμὸν κινουνθ' ἑαυτόν),⁹⁴ he is careful to explain how this definition was inferred. According to Aristotle, Xenocrates reasoned that, since the Platonic forms are numbers (ἀριθμοί), and number-forms are the elements of things (πραγματά), given the principle that 'like cognises like' and the principle that what causes motion must be in motion, if the soul *both* causes the body to move *and* it cognises the world, then the soul must be a number which is in motion.⁹⁵

More explanatory passages are not hard to find. At one point, Aristotle even goes so far as to praise Democritus for having provided a parsimonious (even if false) explanation for why (διὰ τί) soul is both motive and cognitive.⁹⁶ He agrees that, if one defines soul as a kind of spherical atom (or set of atoms), one can plausibly explain both why the soul has the demonstrable attribute of causing motion (on the assumption that spherical atoms are the atoms most capable of producing motion in other things), and the attribute of cognising (because intellect is considered to be something able to be easily moved by nature).⁹⁷

It is because Aristotle wants to test the adequacy of his predecessors' explanations of soul phenomena that, when he brings his review of his predecessors' psychologies to an end, he claims to have reported *both* what they have handed down

⁹⁴ DA 1.2, 404b29-30.

⁹⁵ DA 1.2, 404b27-30. This view of Xenocrates is no doubt derived from his interpretation of the *Timaeus*, which work also attributes to soul both of these features at once. I thank Thomas Johansen for pointing this out to me.

⁹⁶ DA 1.2, 405a9-11. The exact nature of the explanation is disputed. Cf. Hicks (1907, 227-228). However, I take it that Simplic. (*In de Anima*, 31.8ff) is right, and that what is being explained must be the soul's intellectual and motive capacities, not its motive capacities and its being incorporeal. Cf. DA 1.2, 403a28-31, which implies that, for Democritus, external forces acting upon mind or soul atoms determine what items are cognised.

⁹⁷ Such explanatory structures are even found in some of the accounts which Aristotle pays little attention to, such as the report of Thales' belief that magnets have soul because they can move iron at DA 1.2, 405a19-21. On the explanatory nature of this deduction, and a similar report about Thales' reasoning found in Diogenes Laertius = DK A1 (= TEGP 1), cf. Barnes (1982, 5-8).

about the soul, *and* the explanatory causes justifying their claims (καὶ δι' ἧς αἰτίας λέγουσιν οὕτω).⁹⁸

1.7 *The Method of Scientific Inquiry in De Anima 1.3-5*

However, it is one thing to claim that Aristotle represents his predecessors as having offered potentially correct theories of how the soul causes motion and perception in *DA* 1.2, and another thing to claim that he ‘tests’ these theories by means of the method of scientific inquiry. To establish this link, I shall note two places where Aristotle explicitly appeals to the criteria set forth in the scientific method passage whilst engaging with his predecessors’ definitions of soul.⁹⁹ The subsequent chapters of this work shall attempt to demonstrate in further detail the extent to which Aristotle adheres to this scientific method in testing out the explanatory power of individual predecessor theories of soul.

One clear place that Aristotle brings his method of scientific inquiry to bear upon the predecessors is in *DA* 1.5, when he criticises Xenocrates’ definition of the soul. He writes:

For not only is this definition (ὁρισμὸν) of soul [sc. as a moving number] such as to be impossible, but the definition of a psychological attribute (συμβεβηκός) is also impossible [sc. using this definition]. This would be clear if someone attempted from this account (ἐκ τοῦ λόγου) to define (ἀποδιδόναι) the affections and the works (τὰ πάθη καὶ τὰ ἔργα) of the soul, such as calculations, perceptions, pleasures, pains, however many of these affections there are. For just as we said earlier, from these accounts it is not

⁹⁸ *DA* 1.2, 405b30. However, it might be objected that Aristotle is giving a general second-order explanation of the ‘cause’ of his predecessors’ beliefs, rather than a ‘cause’ as it figures as a middle term or explanation in their first-order arguments. However, I take it as more likely that Aristotle is treating his predecessors as having offered ‘causes’ and ‘principles’ which attempt to justify their definition of soul, just as he suggests his predecessors have done in respect of other phenomena in *Metaph.* A. Cf. n. 88 *supra*.

⁹⁹ As Hicks (1901, 193) rightly sees.

easy to divine (μαντεύσασθαι) what these attributes are. (DA 1.5, 409b13-18)¹⁰⁰

Here, Aristotle argues that, from the definition of soul as ‘self-moving number’, even apart from the problem that numbers do not appear to be the sorts of things that can be in motion (e.g. do odd numbers move, or is it rather prime numbers?), one cannot conceive of how the middle term, ‘self-moving number’, would explain the soul’s demonstrable attributes. The most one can get from this definition, according to Aristotle, would be the explanatory syllogism:

1. Soul is a self-moving number, N .
2. A self-moving number, N , or its properties, possess the attributes, φ_1 , $\varphi_2, \dots, \varphi_n$.
3. Soul possesses the attributes, $\varphi_1, \varphi_2, \dots, \varphi_n$.

Regardless of what number we actually plug in for N , e.g. 2, 3, 4, and regardless of what known properties of number we pick (e.g. divisible by two, prime, etc.), we do not thereby come to understand any better what a psychological attribute such as pain, or pleasure, *is*, or is caused by, in the way in which we might understand better what thunder is by conceiving of it as a type of noise which is caused by fire being extinguished in the clouds.

Another place that Aristotle clearly refers to his method of scientific inquiry is in his criticism of the harmony theory of soul. In this context, Aristotle gives the argument that:

¹⁰⁰ οὐ γὰρ μόνον ὁρισμὸν ψυχῆς ἀδύνατον τοιοῦτον εἶναι, ἀλλὰ καὶ συμβεβηκός. δῆλον δ’ εἴ τις ἐπιχειρήσειεν ἐκ τοῦ λόγου τούτου τὰ πάθη καὶ τὰ ἔργα τῆς ψυχῆς ἀποδιδόναι, οἷον λογισμούς, αἰσθήσεις, ἡδονάς, λύπας, ὅσα ἄλλα τοιαῦτα· ὥσπερ γὰρ εἵπομεν πρότερον, οὐδὲ μαντεύσασθαι ῥάδιον ἐξ αὐτῶν.

This [sc. inability of a harmony to be soul] would be patently obvious if someone attempted to define (ἀποδιδόναι) the passive attributes and the active works (τὰ πάθη καὶ τὰ ἔργα) of the soul by reference to a particular harmony; for it is difficult to harmonise them together (ἐφαρμόζειν). (DA 1.4, 408a3-5)¹⁰¹

I will discuss Aristotle's criticisms of the harmony theory more fully in *chapter 3*, but for the moment, it is enough to note that Aristotle is not simply making a passing dialectical comment here. In fact, as I will show later, Aristotle is claiming that the term 'harmony' doesn't appear to explain – through a relevant middle term – any of the consequential attributes or capacities which the soul possesses. The reason why is that, if one posits that the essence of soul is a type of harmony, the most one can cull from this definition is a syllogism of the following sort:

1. The soul is a harmony of bodily opposites.
2. A harmony of bodily opposites, or a property of such a harmony, possesses the attributes, $\varphi_1, \varphi_2, \dots, \varphi_n$.
3. The soul possesses the attributes, $\varphi_1, \varphi_2, \dots, \varphi_n$.

The problem with this syllogism, for Aristotle, is that there are no known attributes of the middle-term 'harmony' which provide an explanatory link to the soul's attributes. For Aristotle, a qualitative state of harmony is only explanatory of, for example, various musical qualities (e.g. the Lydian mode), or the state of various material combinations or mixtures (e.g. the state of houses, chairs, cakes, etc.), but is not

¹⁰¹ φανερώτατον δ' εἴ τις ἀποδιδόναι πειραθείη τὰ πάθη καὶ τὰ ἔργα τῆς ψυχῆς ἁρμονίᾳ τινί· χαλεπὸν γὰρ ἐφαρμόζειν.

intelligibly connected (even through other properties of a harmony) to any particular *psychological* attributes.

1.8 *The Method of Scientific Inquiry as the Path to First Principles*

In the following chapters, I shall argue that, even when he is not explicit about the fact that he is following his scientific method of inquiry, and even when he does not formulate his predecessors' views (or his refutations of them) in a strict deductive or syllogistic form, Aristotle never strays from his main goal of testing out the explanatory power of their first principles.

However, this thesis comes with three caveats: First, it does not mean that, in following his scientific method of inquiry, Aristotle cannot make use of dialectical tools during the course of his investigation. In fact, in some cases, this will be necessary.¹⁰² One cannot conduct a scientific investigation into the truth of a definition, for instance, without clarifying homonymous terms.¹⁰³ However, I take it that the *use* of a dialectical tool or argument during the course of an inquiry is not sufficient for an inquiry *to be* 'dialectical'. In fact, affirming the latter idea tends to promote confusion in the literature, as it imports a huge edifice of nuanced rules and distinctions which Aristotle is apparently indifferent to in *De Anima*, rules which seem more at home in the context of the debate practise taking place in the Academy and Lyceum.¹⁰⁴

Second, to say that Aristotle follows a scientific method of inquiry in testing his predecessors' theories of soul is *not* to say that *every* criticism he makes is one which attempts to syllogise, in an explanatory way, from a predecessor definition of

¹⁰² Cf. Upton (1985).

¹⁰³ Cf. Ward (2008).

¹⁰⁴ Rightly argued by Smith (1993). Cf. Owen (1961).

soul, through middle term, to one of the soul's *per se* attributes (of the type that I argued for above in respect of the definition of 'thunder').

Although finding such explanatory middle terms or first principles that can figure in the essential definition of the soul is Aristotle's over-arching goal in reviewing the predecessors, I see no reason to believe that it is a requirement of the method of scientific inquiry in general that one can *only* make use of 3-term explanatory syllogisms in order to test the adequacy of particular definitions. As should become clear in the following chapters, Aristotle seems to think that there are a number of problematic entailments which follow from his predecessors' principles and definitions of soul (such as, for example, entailments which conflict with certain empirical phenomena, or with principles of natural science), which for him are enough to show that a particular predecessor thesis or principle cannot provide an adequate explanation of the soul's *per se* attributes.

Third, while the first principles which take up the majority of Aristotle's time are those elements of his predecessors' system of nature which figure in their particular definitions of soul (e.g. atoms, harmony, self-moving motion, and self-moving number), other first principles are *law-like*, such as Empedocles' principle that, 'like cognises like', and the atomist and Platonic principle that, 'nothing moves anything else without being in motion'. In following his scientific method of inquiry, as I shall show, Aristotle will be concerned with both sorts of principles.

1.9 A Potential Objection

One might object that, even if Aristotle makes it appear as if the review of the predecessors is necessary for his inquiry into the soul, he need not bother, given that the argument of *DA* 2.1 seems to 'deduce' that the soul is the substantial form or first fulfilment of an instrumental body without any such background information.

However, I take it that Aristotle thinks that his hylomorphic ‘deduction’ of the definition of the soul, discussed in the *Introduction to the Study*, is justified only because it can avoid the problems suffered by his predecessors’ definitions of soul discussed in *DA* 1.2-5, and by so doing, explain psychological phenomena better than they can. In other words, the justification for Aristotle’s Hylomorphic Definition of the Soul rests in part upon the idea that the definitions of the soul provided by the predecessors are *in fact* said, ‘dialectically and emptily’,¹⁰⁵ at least to the extent that they are unable to demonstrate in an explanatory way the attributes of the soul.¹⁰⁶

Indeed, in the *Posterior Analytics*, Aristotle makes it clear that to obtain scientific knowledge of some *X*, one needs to show that certain competing propositions about *X* are false:

If we are to obtain scientific knowledge through demonstration (δι’ ἀποδείξεως), not only must we know the first principles (ἀρχάς) better and be better persuaded of them than of what is being proved, but we must also not find any other claim more convincing or better known amongst claims opposed to our first principles, from which a mistaken conclusion of some proposition contrary to our first principles may be deduced, since someone who has unconditional scientific knowledge must necessarily be incapable of being persuaded of what is contrary to that knowledge. (*APo* 1.2, 72a37-b4)¹⁰⁷

¹⁰⁵ *DA* 1.1, 403a2.

¹⁰⁶ Someone might wonder, however, what Aristotle takes to be the relationship between definitions which turn out to be said ‘dialectically and emptily’, and definitions offered by the ‘dialectician’ (ὁ διαλεκτικός), who defines psychological affections such as ‘anger’, by mentioning the form of anger – ‘desire for revenge’ but not the material changes associated with this form (*DA* 1.1, 403a29-31). I take it that Aristotle’s puzzle about who the natural scientist (ὁ φυσικός) is has as its conclusion the idea that *both* the (Platonic) dialectician, and the Presocratic ‘natural scientists’, offer definitions of psychological affections which end up being ‘dialectical and empty’ to some degree, insofar as the former can’t derive the material consequences of psychological affections in the body, and the latter can’t derive the formal ones. Both sorts of definitions then, for different reasons, can be considered as (partially) ‘dialectical and empty’, in the sense that neither can derive, in an explanatory way, the relevant psychological phenomena. Cf. *DA* 1.1, 403a19-24.

¹⁰⁷ τὸν δὲ μέλλοντα ἔξεν τὴν ἐπιστήμην τὴν δι’ ἀποδείξεως οὐ μόνον δεῖ τὰς ἀρχὰς μᾶλλον γνωρίζειν καὶ μᾶλλον αὐταῖς πιστεύειν ἢ τῷ δεικνυμένῳ, ἀλλὰ μηδ’ ἄλλο αὐτῷ πιστότερον εἶναι μηδὲ γνωριμώτερον τῶν ἀντικειμένων ταῖς ἀρχαῖς ἐξ ὧν ἔσται

The view expressed here is concordant with certain claims Aristotle makes elsewhere about refutations serving to indirectly ‘prove’ contrary positions.¹⁰⁸ For instance, in the *Eudemian Ethics*, Aristotle claims that the refutation of a competing view serves as a type of demonstration of the view being competed with.¹⁰⁹ Similarly, in *De Caelo*, he claims that demonstrations serve as *aporiai* for the contradictory position.¹¹⁰

If it is the case that Aristotle’s refutations of his predecessors serve to point out in which respect their psychological principles – whether definitional or law-like – are false, the opposites of those respects will be able to be accepted as theorems of his own psychology.

There may also be a deeper reason why Aristotle uses a scientific method of inquiry when dealing with his predecessors’ psychologies. On the basis of Aristotle’s works on nature, there is no obvious reason that Aristotle *must* affirm the Hylomorphic Definition of Soul that he eventually adopts in *DA* 2.1. In fact, a number of options would have been open (and even easier) for Aristotle to adopt: for example, that the soul is a material element such as aether detached from its natural place, or a quasi-elemental stuff, such as *pneuma*, with its own ‘form’ and inner principle of self-motion.¹¹¹ In other words, there is no obvious reason why soul could not itself be a hylomorphic composite.

συλλογισμὸς ὁ τῆς ἐναντίας ἀπάτης, εἴπερ δεῖ τὸν ἐπιστάμενον ἀπλῶς ἀμετάπειστον εἶναι.

¹⁰⁸ Rightly noted by Viano (1996a).

¹⁰⁹ *EE* 1.3, 1215b6

¹¹⁰ *DC* 1.10, 278b6.

¹¹¹ In fact, the author of the (presumably) spurious *De Spiritu* seemed to entertain this sort of possibility. Cf. *Spirit.* 5, 483a30-33.

In fact, in a way, such a view would have been the most obvious choice for Aristotle, given some of his psychological commitments. For instance, Aristotle thinks that the soul is an efficient cause of the body's motion,¹¹² but his standard analysis of motion requires physical contact between two spatially extended objects.¹¹³ In light of such commitments, psychological hylomorphism, even if it is the 'crowning achievement' of Aristotle's natural philosophy,¹¹⁴ is certainly not the most obvious way to receive the crown. If so, a close critique of his predecessors' psychologies would have allowed Aristotle to conceptually map out which form hylomorphism will take in psychology, e.g. whether soul is to be affirmed (i) as itself a hylomorphic composite, (ii) as a formal, final, but not efficient cause of the body's attributes, (iii) as a formal, but not final or efficient cause of the body's attributes, (iv) as an efficient, but not formal or final cause of the body's attributes, or even (v) as a material cause which served as an ingredient going into the mixture which composes bodies (a view which I discuss in *chapter 5*). Soul may even turn out not to be a fundamental 'cause' at all, but a mere accidental effect or epiphenomenon of bodily processes.

Regardless of whether this deeper speculation is correct, this thesis shall argue that Aristotle's hylomorphic psychology does (at least in part) develop out of a transformation of his predecessors' views. For instance, in *chapter 2*, I shall show that

¹¹² Cf. *DA* 2.3, 415b10.

¹¹³ In *Phys.* 3.2, 202a8, Aristotle argues that motion occurs by a potential changer being in contact (θίξει) with a sufficiently suitable changeable. In *Phys.* 7.1, 242b60/242b25, Aristotle argues that it is universally necessary for a primary mover and a moved thing to be in the same place, either by touch or by continuity, if bodily motion is to occur. Wardy (1990, 126) also recognises the difficulty of the contact criterion for the hylomorphic soul-body relation. He argues that if Aristotle's use of the contact criterion were broader than bodily contact, then 'the conception of contact employed is so broadly defined that the proposition that mover and moved must touch threatens to degenerate into a radically ambiguous claim.'

¹¹⁴ Cf. Burnyeat (2002, 36).

Aristotle will transform Plato's principle that the soul is a moved mover, into the principle that it is an *unmoved* mover. In *chapter 3*, I show how he transforms the harmony theorist's principle that soul is a bodily or mathematically defined state controlled by an elemental mixture, into the principle that soul is a non-bodily and non-mathematical power which controls an elemental mixture. In *chapter 4*, I show that he transforms Empedocles' principle that actually-like cognises actually-like, into the principle that soul perceives on the basis of the modal principle that potentially-like cognises actually-like.

For these reasons, although Aristotle would no doubt affirm that individual predecessor definitions of soul are, in the strict explanatory sense, spoken 'dialectically and emptily', for the purposes of scientific inquiry, they are in fact quite rich, since, once engaged with, they help to facilitate plausible guesses about the nature of soul.

Further, in each of the following chapters, I shall try to show that Aristotle does not criticise his predecessors on the basis of doctrines drawn from the hylomorphic psychology of *DA* 2-3 (even if his refutations tend to help establish these doctrines). Instead, I try to show that, although Aristotle does presuppose the reader's familiarity and acceptance of the doctrines of the *Physics* and *On Generation and Corruption* (e.g. the doctrine the four causes, and the doctrine of the unmoved mover), his method of proceeding is to try not to rely too much upon these doctrines, but to give a philosophical reading of his predecessors from 'within' their own system, so to speak, appealing to his own physical doctrines only when absolutely necessary. So, for instance, while Aristotle will appeal to the *Physics*' distinction between moved and unmoved movers to criticise the Platonic definition of soul, in *DA*

1, he does not ever explicitly criticise *any* predecessor for not identifying the soul with a formal, final, or efficient cause.

By analysing Aristotle's treatment of a select number of predecessors, I hope to show that Aristotle does not run roughshod over their psychological theories in order to reach the cookie jar of his own pre-established hylomorphic view. Rather, my analysis shall show that, by working through the implications of his predecessors' psychological principles and definitions on their own terms, insofar as this is possible, Aristotle is able to show where their principles fall short, and where new principles need to be introduced.

1.10 Conclusion

In this chapter, I have argued that Aristotle claims that his investigation into the essential definition of soul requires a particular method, and particular starting points or premises from which to begin. The method which Aristotle settles upon, I claimed, is what I have deemed the method of scientific inquiry. This method begins from factual starting points, which can be cast as premises about phenomena gathered by induction, and tests whether other apparently known facts, principles, or definitions, are explanatory of these initial phenomena (ideally, through middle terms that can be used in demonstrative syllogisms).

I then argued that, in *DA* 1.2, Aristotle treats his predecessors as having tried to offer scientific principles meant to be explanatory of certain attributes granted to belong to the soul, and in particular, its ability to cause perception and motion in animals, and that, in *DA* 1.3-5, he explicitly follows his scientific method of inquiry in testing those definitions and principles. Finally, I argued that Aristotle proceeds in this manner because, by showing where his predecessors' first principles fail to derive their intended results, he can begin to show indirectly what the first principles of

psychology are, and thus, provide indirect justification for his own hylomorphic psychology. This is Aristotle's path to the first principles of hylomorphic psychology.

The Principle of Self-Motion: Plato and the Academy

Nature is a certain principle and cause of being-moved and being-at-rest in that to which it belongs primarily, in virtue of itself and not accidentally.

–Aristotle, *Physics*, 192b20-23

2.1 Introduction

As I argued in *chapter 1*, the most important feature of Aristotle’s discussions of his predecessors in *DA* 1.2, philosophically speaking, is that he portrays their first principles of soul as demonstrative *causes* (αἰτίαι) for why soul is able to perform its characteristic activities.¹¹⁵ The reason for this feature, I claimed, is that Aristotle wants to test the explanatory power of his predecessors’ principles in *DA* 1.3-5 in order to help uncover the soul’s essential definition. In this chapter, I show how Aristotle reviews, and then tests, the explanatory adequacy of the Platonic definition of soul as ‘that which moves itself’ (τὸ κινεῖν ἑαυτὸ).¹¹⁶ This definition asserts self-motion to be the proper first principle and explanatory cause of the soul’s ability to move the body.¹¹⁷

In the first part of this chapter, I show how Aristotle analyses this Platonic definition of the soul, and I indicate the background sources for this definition. In the second part, I explicate Aristotle’s criticisms of this definition in detail, and show how these criticisms are connected to his explanatory project. In the third part, I argue that the results of Aristotle’s criticisms suggests that he thinks soul cannot be a physical

¹¹⁵ *DA* 1.2, 405b30.

¹¹⁶ *DA* 1.2, 4056a1.

¹¹⁷ *DA* 1.2, 404a21. Although they are not explicitly named in this criticism, it is clear that Aristotle means to refer to Plato and/or to the members of Plato’s Academy.

being – in the sense of a being which possesses an ‘internal principle of motion and rest’ – but can be understood as *itself* a φύσις in certain physical beings.¹¹⁸

2.2 The Platonic First Principle of Soul

Before Aristotle investigates the Platonic theory of soul in *DA* 1.3, he introduces it, and the grounds for holding it, in *DA* 1.2:

Still, (i) the same consideration [sc. that motion belongs to the soul] carries over to those who define the soul as that which moves itself (τὸ αὐτὸ κινεῖν).¹¹⁹ For (ii) they seem to have supposed (ὑπειληφέναι) motion (κίνησις) to be nearest in nature to the soul (οἰκειότατον εἶναι τῇ ψυχῇ), and (iii) all (πάντα) other things to be moved (κινεῖσθαι) because of (διὰ) the soul, but (iv) the soul to be moved from itself (ὑφ’ ἑαυτῆς), on account of their never observing anything causing motion (κινεῖν) which was not also itself in motion (κινεῖται). (*DA* 1.2, 404a20-25)¹²⁰

¹¹⁸ Cf. Johansen (2008).

¹¹⁹ The Academic theory of the soul discussed here has its background in Plato’s *Phaedrus* and *Laws*. In *Phaedr.* 245c7, Plato first broaches the idea that the soul is a self-mover (τὸ αὐτὸ κινεῖν), as well as idea that it is the source and principle of motion to all other things (τοῖς ἄλλοις ὅσα κινεῖται τοῦτο πηγὴ καὶ ἀρχὴ κινήσεως) (*Phaedr.* 245c9). In *Leg.* 10, Plato solidifies this theory and explicitly defines the soul as a self-mover. Here, Plato, in the voice of the Athenian Stranger, argues that, in any series of motions, what is moved must be moved by something else in motion, and that it is necessary to trace any series of motions back to a *self-moved motion* (τὸ ἑαυτὸ κινεῖν). The Stranger argues that what is self-moving has the same definition and substance (λόγον ἔχειν τὴν αὐτὴν οὐσίαν) as the soul (*Leg.* 10, 896a3-4), which is likely the referent of Aristotle’s claim in (ii) that motion is what is most akin to the nature of soul. Further evidence that Aristotle has in mind the *Laws* in particular is that it, but not the *Phaedrus*, contains a definition of the self-moving soul which references a *capacity* for motion (τὴν δυναμένην αὐτὴν αὐτὴν κινεῖν κίνησιν) (*Leg.* 10, 896a3), which Aristotle gestures at in *DA* 1.3, 406a1-2. Cf. Cherniss (1962, 391 n.311)

¹²⁰ ἐπὶ ταῦτο δὲ φέρονται καὶ ὅσοι λέγουσι τὴν ψυχὴν τὸ αὐτὸ κινεῖν· εἰκόασιν γὰρ οὗτοι πάντες ὑπειληφέναι τὴν κίνησιν οἰκειότατον εἶναι τῇ ψυχῇ, καὶ τὰ μὲν ἄλλα πάντα κινεῖσθαι διὰ τὴν ψυχὴν, ταύτην δ’ ὑφ’ ἑαυτῆς, διὰ τὸ μηθὲν ὁρᾶν κινεῖν ὃ μὴ καὶ αὐτὸ κινεῖται.

As other scholars have noticed, this report, though brief, is not merely doxographical.¹²¹ Not only is there an empirical justification for the Platonic thesis on offer, but there is also a structure to the beliefs represented. The structure is deductive, and leads directly to the Platonic definition of soul. Call it the Platonists' Self-Moving Soul Deduction:

1. No *X* moves *Y* without *X* being itself in motion. (iv)
2. For all *Y* in motion, *Y* can trace its motion back to soul. (iii)¹²²
3. Thus, soul is in motion and moves itself. (i)

Aristotle's purpose in reporting the Academic definition of soul in this quasi-deductive form is not merely to make it easier to see where the Platonists generally go wrong in deducing their first principle of soul. If it were, the only point of the argument would be to show that the belief represented in premise 1 is based upon inadequate perceptual experience and observation.¹²³ In such a case, Aristotle would have no need to return to the Platonic definition of soul in *DA* 1.3 and subject it to such withering scrutiny. Instead, it seems that the beliefs of the Platonists are represented in this deductive form so that we can understand their conclusion to be a rational, even if rudimentary, account of the soul. By determining where exactly this

¹²¹ Cf. *DA* 1.1, 403b28-31, which Viano (1996a, 58) sees as already implicitly suggesting two dialectically opposed theses: is the soul a mover moved (κινούν κινούμενον), or a mover not-moved (κινούν ἀκίνητον)?

¹²² Although Aristotle could be claiming here that the Platonists thought that soul was a direct cause of the motion of any object *X* (e.g. waves, wind, earthquakes, etc.), such that no *X* which is not-soul actually causes any motion, it is more likely that he is referring to the argument of the *Laws*, that all motion can be traced back, through a series of intermediate movers, to a self-moved mover (see n. 118 *supra*). I thank Lindsay Judson for this observation.

¹²³ Although Aristotle indeed suggests here that premise 1 of the syllogism is false, he does not, at least in *DA* 1.2, overtly claim this.

account goes wrong, I shall argue, Aristotle thinks that it is possible to make progress in determining the right first principle of soul.

2.3 *The Soul's Motion: Unnecessary or Impossible?*

This interpretation finds confirmation in *DA* 1.3, where Aristotle seeks to find out in what sense, precisely, the Platonic definition could serve as a genuine explanation of how the soul moves the body.¹²⁴ As preliminary evidence that Aristotle is trying to answer this scientific question, rather than trying to give a dialectical refutation, we can note that there are a number of *topoi* available from the *Topics* that Aristotle *might* have drawn upon if his criticisms here were merely dialectical, as some commentators have alleged.¹²⁵ As just one example, Aristotle could have immediately used the *topos* of whether a definition fails to give a proper genus, discussed at *Top.* 6.5. This error occurs, says Aristotle, when one uses a substantive participial phrase as a definition (e.g. ‘the thing φ -ing’), rather than giving a descriptive genus plus a defining attribute (e.g. ‘The F that φ s/is φ ’). As examples of this sort of flawed definition, Aristotle gives ‘body’ =_{def} ‘τὸ ἔχον τρεῖς διαστάσεις’, and ‘man’ =_{def} ‘τὸ ἐπιστάμενον ἀριθμεῖν’.¹²⁶

Here, similarly, soul is said to have been defined by the Platonists as either ‘τὸ κινεῖν ἑαυτὸ’, or, ‘[τὸ] δυνάμενον κινεῖν [ἑαυτό]’.¹²⁷ On the basis of the above *topos*, Aristotle could have simply argued that the Academic definition on offer, because it does not posit a proper genus, simply does not give enough information to understand the *sort of object* that the soul is which produces or shares in motion. However, rather

¹²⁴ Ross (1961, 17), not recognising this, unfairly claims that *DA* 1.3, 406a3-b25 is ‘[...] a highly dialectical and rather unsatisfactory passage.’ Cf. *Metaph.* Λ.6, 1072a1.

¹²⁵ E.g. Ross (1961, 17), and generally Cherniss (1935).

¹²⁶ *Top.* 6.5, 142b25-26.

¹²⁷ *DA* 1.3, 406a1-2.

than simply running through a variety of *topoi*, Aristotle seems to approach the definition in a more sophisticated manner. He begins:

Let us investigate first the topic of motion. For (i) perhaps (ἴσως)¹²⁸ it is not only false that the essence (οὐσίαν) of the soul is such as they claim it to be, namely, ‘a thing that moves itself’ (τὸ κινεῖν ἑαυτὸ), or (ii) ‘a thing with the potential to move itself’ (δυνάμενον κινεῖν), but rather (iii) it is impossible that motion (κίνησιν) belongs to soul.¹²⁹ On the one hand, (iv) that it is not necessary (οὐκ ἀναγκαῖον) for what causes motion (τὸ κινεῖν) also to be moved (κινεῖσθαι) has already been stated.¹³⁰ But (v), there are two senses in which anything is in motion (κινουμένου): either (a) it is moved in respect of something different (καθ’ ἕτερον), or (b) it is moved in respect of itself (καθ’ αὐτό); (vi) we say that something is moved in respect of something different insofar as it is moved by being *in* something moving (ἐν κινουμένῳ), such as sailors are moved [sc. by being in a ship]; for (vii) the sailors are not moved in the same way as the ship; for (viii) the ship is moved in respect of itself (καθ’ αὐτὸ κινεῖται), but (ix) the sailors [are moved] in respect of being in the moving ship (ἐν κινουμένῳ εἶναι). (x) This is clear in the case of the parts of the body. For (xi) the proper (οἰκεία) motion of feet is walking (βάδις), and (xii) walking belongs to humans, but (xiii) walking does not belong to sailors at the time they are sailing (τότε).¹³¹ But (xiv) since being moved is said in two ways, now we must investigate whether soul is moved (κινεῖται) in respect of itself (καθ’ αὐτήν) and shares (μετέχει) in motion. (DA 1.3, 405b31-406a12)¹³²

¹²⁸ Here and throughout DA 1, I shall assume that ἴσως is to be read as expressing modest reservation about the claims to which it is attached.

¹²⁹ Strictly speaking, Aristotle should have added ‘*per se*’ here, because it is clear from DA 1.4, 407b30-31, that Aristotle does not think it impossible for motion to belong to the soul *per accidens*.

¹³⁰ I.e. in the *Physics*. Ross (1961, 186) supposes πρότερον εἴρηται to be a reference to DA 1.2, 403b29, but Themistius and Simplicius think that Aristotle is referring to *Phys.* 8.5. Hicks (1907, 240) remains agnostic. I take it that the commentators are correct.

¹³¹ Whilst Aristotle here suggests that people can stand still, sit, or walk on ships, I take it that he also means to leave open, if not outright suggest, the possibility that the sailors are *causing* the motion of the ship through *rowing* (e.g. in a trireme), or turning the rudder. This possibility is also noted by Hicks (1907, 242). It finds further confirmation in the fact that, in DA 2.1, 413a8-10, Aristotle suggests that the soul might be the fulfilment (ἐντελέχεια) of the body in the same way that a sailor (probably ‘captain’) is the fulfilment of a ship, which must mean either the captain is performing the motion of *steering*, or, causing the sailors to steer the ship. Cf. *Phys* 2.3, 195a12-14, which claims that shipwrecks can be said to be caused by the absence of the captain. On the soul/boatman analogy, cf. Tracy (1982).

¹³² Ἐπισκεπτέον δὲ πρῶτον μὲν περὶ κινήσεως· ἴσως γὰρ οὐ μόνον ψευδὸς ἐστὶ τὸ τὴν οὐσίαν αὐτῆς τοιαύτην εἶναι οἷαν φασὶν οἱ λέγοντες ψυχὴν εἶναι τὸ κινεῖν ἑαυτὸ ἢ δυνάμενον κινεῖν, ἀλλ’ ἐν τι τῶν ἀδυνάτων τὸ ὑπάρχειν αὐτῇ κίνησιν. ὅτι μὲν οὖν οὐκ ἀναγκαῖον τὸ κινεῖν καὶ αὐτὸ κινεῖσθαι, πρότερον εἴρηται. διχῶς δὲ κινουμένου

Aristotle begins by making two claims. The first claim, call it (A), is that it is not necessary that motion belong to the essence of soul, since there exist things which need not be moved when they cause movement. The second claim, call it (B), is that it is *impossible* for the soul to be moved at all.¹³³ In respect of (A), given that the type of definition of soul that Aristotle is searching for is one which exhibits its essential properties, and essential properties are by definition *necessary* properties, if the Platonic definition does not fulfil the latter condition, it will also not fulfil the former.

Claim (B) is even stronger; it suggests that soul might belong to a category of objects of which it is not even intelligible to predicate motion (e.g. abstract numbers). Whilst interpreters have rightly questioned Aristotle's reasons for being able to suggest both of these claims at the outset of his discussion, it is clear from what follows that Aristotle is not simply *assuming* that the soul can't be moved on the basis of some unexpressed or undefended metaphysical commitment. Rather, he is simply using a common pattern of argument, which he relies upon elsewhere,¹³⁴ by which he first asserts a thesis to be established, and then proceeds to give justifications for this thesis.

In the passage at hand, however, Aristotle only means to show the plausibility of thesis (A). To this end, Aristotle begins his criticism with the claim that, from the

παντός—ἢ γὰρ καθ' ἕτερον ἢ καθ' αὐτό· καθ' ἕτερον δὲ λέγομεν ὅσα κινεῖται τῷ ἐν κινουμένῳ εἶναι, οἷον πλωτῆρες· οὐ γὰρ ὁμοίως κινουῦνται τῷ πλοίῳ· τὸ μὲν γὰρ καθ' αὐτὸ κινεῖται, οἱ δὲ τῷ ἐν κινουμένῳ εἶναι (δῆλον δ' ἐπὶ τῶν μορίων· οἰκεία μὲν γὰρ ἐστὶ κίνησις ποδῶν βάδισις, αὕτη δὲ καὶ ἀνθρώπων· οὐχ ὑπάρχει δὲ τοῖς πλωτῆρσι τόδε) —διχῶς δὲ λεγομένου τοῦ κινεῖσθαι νῦν ἐπισκοποῦμεν περὶ τῆς ψυχῆς εἰ καθ' αὐτὴν κινεῖται καὶ μετέχει κινήσεως.

¹³³ The claim that there exists a kind of mover, *C*, which is not necessarily moved, *M*: $(\exists x) [C(x) \rightarrow \sim \Box M(x)]$, the argument supported by *Phys.* 8.5, is of course not equivalent to the claim that soul, *S*, is necessarily unmoved: $(\forall x) [S(x) \rightarrow \Box \sim M(x)]$. Cf. Menn (2002, 96-97).

¹³⁴ E.g. *DA* 1.4, 407b33-34.

standpoint of *Physics* 8.5, it is not necessary for everything which is a mover to itself be in motion. Call this the Motion Asymmetry Argument. In its simplest form, it can be formulated:

1. All things trace their motion back to the soul. [Assumed]
2. There exists some *X* which can move *Y* without *X* being in motion. (iv)
3. Soul may be *X*. [Assumed]
4. Thus, it is not necessary to infer that soul is in motion. (iv)

It is important to note that this argument does not *prove* that the soul is not a self-mover, nor does it even show that the soul is *not* essentially and by definition a self-mover. Instead, the argument is designed only to call into doubt the premise which led Aristotle's Platonist predecessors to infer that self-motion is the first principle of the soul, namely, the premise that everything that causes motion must itself be *in* motion. As Aristotle points out in premise 2, he does not believe that this thesis can be taken universally. Aristotle makes no move, however, to deny the Platonist assumption in premise 1, that soul is in some sense a cause to which 'all things' can trace their motion.¹³⁵

¹³⁵ At the least, it is clear that Aristotle does not wish to dispute the claim that soul moves animal bodies, as this is in fact one of the basic phenomena psychology should explain (cf. *chapter 1*). Indeed, the soul's ability to move and direct the body locally through space is never in doubt in *DA* 1; rather, it is only the way in which soul asserts its control over the body which is in question. Cf. *DA* 1.4, 407b34-408a1; *DA* 1.4, 408a32-33; *DA* 1.4, 409a16-17; *DA* 1.5, 411a29. However, understanding how Aristotle conceives of this ability is controversial. That soul in some sense 'imparts' motion to the body is defended by Code (1987), Tweedale (1990), and Menn (2002). In contrast, Gill (1991), Sauvé (1987), Meyer (1994), and Waterlow (1998), argue that soul is an efficient cause of the motion of the body in what I would call a 'Chrysippian' sense. If I read them correctly, they seem to think that the soul does not actually initiate any motion in an animate body, but rather serves as a 'list of

Since this argument establishes at most that soul *might* be an unmoved mover, Aristotle proceeds to clarify the ways in which the soul *could* be in motion. This he accomplishes through an analysis of the different senses in which κινουμένον can be said.¹³⁶ Aristotle argues that the claim that the soul is ‘moved’ is ambiguous,¹³⁷ since being in motion (κινουμένον) can bear the meaning either of being moved *per se* (καθ’ αὐτό), or of being moved *per aliud* (καθ’ ἕτερον). In the former case, the idea is that some object *X* can be in motion independently of another object *Y*.¹³⁸ In the latter case, the opposite holds; *X*’s being in motion necessarily derives from some object *Y* being in motion of which *X* is an extrinsic part or attribute.¹³⁹

Importantly, this distinction, like the Motion Asymmetry Argument, neither rules out the claim that soul could be in motion *per se*, nor the claim that the soul initiates motion *per se*.¹⁴⁰ Rather, Aristotle’s distinction between how sailors in a ship are moved and how the ship is moved only shows two *different* ways in which the

instructions’ for the elemental powers to follow, while the elemental powers do all the real causal work. I argue against such a view in *chapter 3*.

¹³⁶ This exploration of the many ways in which terms are said (πολλαχῶς λέγεται) is a fundamental insight of Aristotle’s logical theory, and is used in his logical, ethical, physical, and metaphysical works. Cf. Shields (2002), and Ward (2008).

¹³⁷ Cf. *Phys.* 8.5, 257b18-19. In *GC.* I.7, 324b26-29, Aristotle argues that τὸ κινεῖν is also said διχῶς.

¹³⁸ Cf. Hicks (1907, 241). Importantly, despite some grammatical differences, this distinction seems likely to have been uncontroversial to Platonists, given that some form of the *per se/per accidens* distinction seems to have been in active use in the Academy, e.g. *Soph.* 255c14-15: Ἀλλ’ οἶμαί σε συγχωρεῖν τῶν ὄντων τὰ μὲν αὐτὰ καθ’ αὐτά, τὰ δὲ πρὸς ἄλλα ἀεὶ λέγεσθαι. Annas (1974) argues that this type of distinction became standardised in the Academy, even though it had not reached a technical status in the Platonic dialogues.

¹³⁹ Cf. *Phys.* 2.1, 192b23-27; *Phys.* 4.4, 211a17-22; *Phys.* 5.1, 224a21-30; *Phys.* 8.4 254b7-12. I take it that this means that, even if one is riding a bike, one is moved *per aliud*, in virtue of the bike, despite the fact that one is causing the motion of the bike *per se*.

¹⁴⁰ As I shall argue below, Aristotle accepts the latter claim.

soul might be conceived of as being in motion.¹⁴¹ Call the first of these ways *Contained Accidental Motion*:

Contained Accidental Motion =_{def} Some *X* is in *contained accidental motion* iff *X* is (a) not an intrinsic part of *Y*, (b) exists in a *Y* which is undergoing a motion *M per se*.

This principle can be seen as instantiated in Aristotle's sailor/ship argument. Call it the Unmoving Sailor Argument:

1. Ships are moved locally [across water] *per se*. (viii)
2. Sailors are in boats but not as intrinsic parts of boats. (ix)
3. Sailors suffer *contained accidental local motion*. (vi), (vii)

That Aristotle does not mean to rule out by this argument that the soul could have a *different per se* motion from the body in which it resides is suggested by the argument which immediately follows. This argument assumes that a subject of motion might be said to be moved accidentally if it is contained in something else *and* moved in a way different from its natural *per se* motion. Call this *Restrained Accidental Motion*:

¹⁴¹ This distinction between contained and restrained accidental motion is first drawn by Aristotle in *Phys.* 4.4, 211a17-22, where Aristotle divides the class of things moved κατὰ συμβεβηκός into (a) that which ἐνδεχόμενον κινεῖσθαι καθ' αὐτό, such as the parts of the body, and rivets in the ship (i.e. intrinsic parts of physical wholes), and (b) things οὐκ ἐνδεχόμενα, such as whiteness and knowledge (i.e. properties which are not intrinsic parts of physical wholes). It is important to note, however, that objects in either class might serve as an *efficient cause* of some motion (e.g. whiteness causing the perception of white).

Restrained Accidental Motion =_{def} Some *X* is in restrained accidental motion iff *X* (a) is not an intrinsic part of *Y*, (b) exists in *Y* which is undergoing a motion *M per se*, and (c) has a proper *per se* motion *P*.¹⁴²

Restrained accidental motion, as is apparent, is just a more specific form of contained accidental motion. However, the difference between these two forms of accidental motion is important for Aristotle, for the latter, but not the former, provides justification for the idea that, even if the soul undergoes some motions *per aliud* by being enclosed in a body, it need not undergo *all* of its motions by being so contained: restrained accidental motion leaves open the possibility that soul might both initiate and suffer its own proper motion.

This latter point becomes clear in Aristotle's argument about the motion that sailors can partake in *qua* human beings. Call this Aristotle's Proper Motion Argument:

1. The proper/*per se*¹⁴³ motion of human beings is what belongs to their feet.
(xi)
2. Walking is the proper/*per se* motion belonging to feet.(xii)
3. Walking is not the motion that sailors undergo *per se* at the time of being in a ship moving across water. (xiii)

¹⁴² I take it that it does not matter whether *P* is exercised or not. A plant, for example, which has a *per se* motion of growing, will still suffer restrained accidental motion whilst on a moving ship (whether it is growing or not). I thank Thomas Johansen for this clarification.

¹⁴³ Although Aristotle does not explicitly express the equivalence between something that moves *καθ' αὐτὸ* and a motion that is *οικεία* to something, these two ideas must be logically equivalent, given that the conclusion of the argument is that the sailors do *not* move *per se* whilst on the ship, which is defended by way of claiming that the sailors do *not* walk whilst on the ship.

4. Therefore, sailors are in *restrained accidental local motion* whilst sailing.

[Implied]

In this argument, Aristotle gives a different reason for rejecting the idea that sailors are moved *per se* whilst in a sailing ship, namely, that the kind of motion that sailors properly undergo *per se* is the sort of motion that belongs to them *qua* human, and this is a motion performed with an intrinsic part of their body.

Aristotle's idea is that, even if the soul is an independently existing subject residing in the body (i.e. as an 'extrinsic part'), as the Platonists affirm, its self-motion or capacity for self-motion still needs to be specified as either (a) a contained accidental motion which is only undergone in virtue of its being in the body (perhaps on the assumption that soul is essentially at rest), or (b) a natural motion that is different from the natural motions of the body.

The latter option would in fact be highly amenable to Plato's claims in various dialogues that reasoning alone is the natural motion that the soul engages in 'itself through itself' (αὐτῇ δι' αὐτῆς),¹⁴⁴ as well as his claim in the *Timaeus* that there are some motions (e.g. perception) that the soul seems to suffer only because of its being enclosed within a body.¹⁴⁵

In either case, (xiv) makes it clear that Aristotle does not take himself to have proven anything about what of kind of motion, if any, the soul can partake of. Instead, he takes it to be the task of his present investigation to determine whether the soul can be moved *per se* or only *per accidens/per aliud*.¹⁴⁶ This can be seen by noting that

¹⁴⁴ Cf. *Theaet.* 185e1; *Phaed.* c2-79d7.

¹⁴⁵ Cf. *Tim.* 44a7-b1.

¹⁴⁶ Although Aristotle does not mention it, it is also conceivable that soul is moved neither *per se*, nor *per accidens*. Such would be the case if soul was identical to the first unmoved mover of the cosmos.

Aristotle structures the arguments which follow in the form of a conditional dilemma: *If* the first principle of the soul (i.e. the principle which determines most basically what the soul is) is *self-motion*, then, given the aforementioned senses of ‘being moved’, necessarily, soul must be moved either (a) *per se*, or (b) *per accidens* (by being contained or restrained). In what follows, Aristotle will argue that whilst the soul can be moved *per accidens*, true first principles must belong to their subject *per se*, and ascribing being-moved to the soul *per se* involves insurmountable difficulties.

2.4 *The First Horn of the Dilemma: Soul is Moved Per Se*

Aristotle begins by investigating the first horn of the dilemma posed above. To this end, he attempts to determine in which way, if any, the soul can be moved *per se*.

(i) There are four ways of being in motion – spatial motion (φορᾶς), qualitative alteration (ἀλλοιώσεως), diminution (φθίσεως), and growth (αὐξήσεως) – and (ii) so soul will be moved with either one, many, or all of these kinds of motion. But (iii) if the soul is not moved accidentally (μὴ κατὰ συμβεβηκός), then motion would belong to it by nature (φύσει); but (iv) if this is the case, so also would place (τόπος). For (v) all of the aforementioned types of motion occur in place (ἐν τόπῳ). (DA 1.3,406a12-16)¹⁴⁷

Call this Aristotle’s Spatiality of Soul Argument.¹⁴⁸ It can be formulated as follows:

¹⁴⁷ τεσσάρων δὲ κινήσεων οὐσῶν, φορᾶς ἀλλοιώσεως φθίσεως αὐξήσεως, ἢ μίαν τούτων κινεῖται ἂν ἢ πλείους ἢ πάσας. εἰ δὲ κινεῖται μὴ κατὰ συμβεβηκός, φύσει ἂν ὑπάρχοι κινήσεις αὐτῇ· εἰ δὲ τοῦτο, καὶ τόπος· πᾶσαι γὰρ αἱ λεχθεῖσαι κινήσεις ἐν τόπῳ.

¹⁴⁸ This criticism has a dialectical precedent in *Top.* 2.4, 111b4-8, where Aristotle gives instructions in how to combat a definition of the soul as moved. The most important difference between these two passages is that, in the scientific-explanatory context of the *De Anima*, Aristotle is not merely trying to force an opponent into admitting that the soul doesn’t move; rather, he is setting up a sophisticated argument to show that *if* soul is moved, *then* it must be conceived of as one of the natural elements, which is a claim that the Platonists, but not every predecessor, wants to deny. Cf. Huby (1962).

1. If (a) the soul is moved non-accidentally, then (b) it is moved by nature.
(ii)-(iii)
2. There are four ways of being-moved by nature: spatial motion, qualitative alteration, diminution, and growth. (i)
3. Every way of being-moved by nature takes place in space. (v)
4. Thus, if (a), then soul is an object which has a spatial location. (iv)

Aristotle's justification for these premises cannot be understood without taking into account a number of scientific distinctions he lays down in the *Physics*.

To begin, premise 1 makes direct reference to *Phys.* 2.1, which spells out more clearly why being moved *μὴ κατὰ συμβεβηκός* entails being moved by nature. In this chapter, Aristotle argues that beings can be classified into (a) those which exist by nature (*φύσει*), and (b) those which exist through other causes (*δι' ἄλλας αἰτίας*).¹⁴⁹ Beings which exist by nature, Aristotle argues, are just those beings which have an *internal principle* (*ἐν ἑαυτῷ ἀρχήν*) which causes them to be moved and to rest in certain ways. Things that are made to move and rest by *external* principles, Aristotle claims, are moved *per accidens*.

¹⁴⁹ *Phys.* 2.1, 192b8-9. This principle is also stated in *DC* 3.2, 301b17-19. Hicks (1907, 243) incorrectly infers that if a being does not contain within itself an inner principle of motion and/or rest, it 'must be assigned to the products of art or manufactured articles [...].' That this is a false dichotomy can easily be seen in noting that Aristotle does accept that soul is a being, but neither accepts that it has an internal principle of rest and motion, nor that it is a product of art. The distinction Aristotle draws in *Phys* 2.1 is not between (a) beings which exist by nature and (b) beings which exist through τέχνη, but between (a) beings which exist by nature and (c) beings which exist *through other causes*. Thus, even if soul did not fall under (a), there are other causes in Aristotle's physics by which it might be said to exist. The octave, for example, does not exist by nature, because it has no internal principle of motion or rest, but exists through having a formal cause which is the ratio of 2:1. Cf. *Phys.* 2.3, 194b26-28.

Premise 1 of the Spatiality of Soul Argument takes up this distinction, and affirms that if soul is not moved *per accidens*, where being moved *per accidens* is understood as having an *external* cause of motion generally, then soul must be moved by some internal cause, which is what a ‘nature’ is. In effect, Aristotle is suggesting that soul, if it moves by nature, will be a physical object, in the sense of a substance (οὐσία), and a substance in the sense of a subject (ὑποκείμενον) of natural motions.¹⁵⁰

Premise 2 is similarly justified by the *Physics*. In *Phys.* 2.1, Aristotle specifies that all natural motion is reducible to four basic kinds: motion in space (κατὰ τόπον),¹⁵¹ growth, diminution, and alteration.¹⁵² As with premise 1, Aristotle must be understood as suggesting again that soul, if it is moved *per se*, is some sort of natural physical substance, but now with the addition that such a substance is spatially locatable.

Premise 3 is justified in the same way. Given that Aristotle defines locomotion as the kind of motion that an object undergoes whilst changing its spatial location,¹⁵³ and defines growth and diminution as an object’s getting bigger or smaller in extension (μέγεθος), it follows that these three motions cannot occur apart from space.¹⁵⁴

It is more difficult to see why alteration implies an object in space, but it is easily resolved by noting that in *Phys.* 8.7 and *GC* 1.6, Aristotle argues that alteration presupposes an agent and a patient which are able ‘to be in contact’ (ἄψασθαι) with one another, and he claims that (most) cases of contact presuppose two extended

¹⁵⁰ *Phys.* 2.1, 192b33-34: καὶ ἔστιν πάντα ταῦτα οὐσία· ὑποκείμενον γάρ τι, καὶ ἐν ὑποκειμένῳ ἔστιν ἡ φύσις αἰεί. Cf. Ross (1936, 501) on the importance of the comma after τι.

¹⁵¹ Here, synonymous with φορά.

¹⁵² *Phys.* 2.1, 192b14-15

¹⁵³ *Phys.* 8.7, 260a26-29.

¹⁵⁴ Cf. *Phys.* 8.7, 260b13-15; *GC* 1.5, 320a18ff.

objects reciprocally touching one another.¹⁵⁵ The correct application of this principle is that, if the soul were a *self-altering* thing, soul would have to be part patient, and part agent, and be extended in such a way as to have these parts come into reciprocal contact with one another.

Now, despite this level of background justification, it is not clear how – or even whether – this argument is meant to serve as a refutation of the Platonic definition of soul. *Prima facie*, there seems to be nothing intrinsically absurd in thinking that something called soul, characterised only by its ability to be in motion, exists in a spatial location.¹⁵⁶ Even more problematically, it appears that Plato actually accepts this thesis.

In *Leg.* 10, Plato claims that amongst beings in the universe, some things *remain* in one place, whilst others *move* in one place (ἐν χώρᾳ τινὶ) or through many places.¹⁵⁷ Within the classification of things that move in one or through many places, Plato lists ten types of motion, the last of which is *self-motion* – later identified as the definition and substance of the soul. Now, despite the fact that Plato appears to argue that the soul's self-motions (e.g. βούλεσθαι, σκοπεῖσθαι, etc.) are prior to any motions which the body has,¹⁵⁸ he goes on to affirm explicitly that *all* kinds of motion – including (implicitly) the self-motion of the soul – occur either in a single place (τόπῳ), or through several places.¹⁵⁹

¹⁵⁵ Cf. *Phys.* 8.7, 260b1-5; *GC* 1.6, 322b9ff.

¹⁵⁶ Aristotle gives soul as an example of something that exists in place only *per accidens* at *Phys.* 4.4, 212b11-112. However, his justification for this is unclear, as he also claims that the cosmos as whole exists in place *per accidens*, in virtue of having elemental parts that exist in place. The analogy suggests that soul is *itself* the 'place' of the body.

¹⁵⁷ *Leg.* 10, 893c1-2.

¹⁵⁸ For the list of these motions, cf. *Leg.* 10, 896e8-897b5.

¹⁵⁹ *Leg.* 10, 897e11-898a1: Τῶν δ' αὖ κινουμένων τὰ μὲν ἐν ἐνὶ τόπῳ κινεῖσθαι, τὰ δ' ἐν πλείοσιν φερόμενα. Cf. *Leg.* 10, 896c9-d1. Cherniss (1962, 402) fails to recognise this point when defending Plato against Aristotle's charges. Themist. (*Paraphrasis in*

The *only* exception to the rule about motions being in a spatial location is the motion of intellect (νοῦς), a sort of god that directs the motion of the good cosmic soul.¹⁶⁰ The motion that belongs to intellect is described by Plato as an image of, but *not* identical with, the first of the ten kinds of motion Plato spells out, namely, the motion of an object that remains in a single place whilst rotating around an axis.

Given this background, it seems that Aristotle could not have intended the Spatiality of Soul Argument as a stand-alone refutation of the thesis that self-motion is the first principle of the soul, given that Plato – according to *Leg.* 10 – *agrees* that spatial location (or place) belongs to every form of motion other than the motion of νοῦς. Rather, Aristotle must simply be attempting to show what entailments follow from the principle of self-motion.

What is established by the Spatiality of Soul Argument is only that a self-moving soul must be conceived of as a *spatial soul* undergoing one or more of the four kinds of motion. So far, this need not be problematic for Plato. What Aristotle is concerned with, however, is whether or not a spatial soul in motion will be able to explain *how* the soul is related to and moves the body, as this is what Aristotle's scientific method of inquiry seeks to establish.

If the above interpretation is correct, then Aristotle's next argument, because it is connected to the one previous to it, is also not meant to be a refutation, but to provide ancillary support for the idea that soul is spatial if it is moved *per se* by nature. Aristotle argues:

DA, 16.19-16.35) discusses the criticism of one ancient critic who provided an extended argument against Aristotle that Plato did not identify the soul's motion as being κατὰ τόπον. However, even if this were true, *Leg.* 10 shows that the soul's motion would still have to be ἐν τόπῳ. Themistius rightly concludes in 17.14-15 that, even if the critic is right, the defenders of the Platonic position should teach more clearly how exactly the soul moves. Cf. Solmsen (1960, 175).

¹⁶⁰ Cf. Menn (2002).

But (i) if the essence (οὐσία) of the soul is to move itself, then the property of ‘being moved’ (τὸ κινεῖσθαι) will not belong to the soul *per accidens*, (ii) just as in the case of white, or 3-cubits; for (iii) these are moved, but moved *per accidens*, for (iv) it is that to which white and 3-cubits belong, namely, the body, which is the thing really moved. (v) For this reason, place does not belong to them [*sc.* white and 3-cubits]. But (vi) place will belong to soul if it shares (μετέχει) in motion by nature (φύσει). (DA 1.3, 406a16-22)¹⁶¹

Here Aristotle introduces a different argument for why place will belong to the soul if the soul’s essence is self-motion. Call this the Motion of Accidents Argument:

1. If the essence of some *X* is φ , then φ will belong *per se* to *X*, and not *per accidens*. (i)
2. The essence of soul is to move itself, and being moved entails being in space *per se*. (i),(vi)
3. Therefore, being moved, and being in space, will belong *per se* to soul. (i)

It is important to note at the outset that Aristotle’s examples of properties which are only moved *per accidens* (in virtue of the bodies they attach to) are designed to demonstrate the positive thesis that *place* belongs to soul *per se* if being-moved belongs to it *per se*. They are *not* designed to show that, if being-moved does *not* belong to the essence of soul, then soul is *best* conceived of as an accidental ‘property’ that a living body carries around with it, like a colour, or a shape, as some

¹⁶¹ εἰ δ’ ἐστὶν ἡ οὐσία τῆς ψυχῆς τὸ κινεῖν ἑαυτήν, οὐ κατὰ συμβεβηκὸς αὐτῇ τὸ κινεῖσθαι ὑπάρξει, ὥσπερ τῷ λευκῷ ἢ τῷ τριπλήχει· κινεῖται γὰρ καὶ ταῦτα, ἀλλὰ κατὰ συμβεβηκὸς· ὃ γὰρ ὑπάρχουσιν, ἐκεῖνο κινεῖται, τὸ σῶμα. διὸ καὶ οὐκ ἔστι τόπος αὐτῶν· τῆς δὲ ψυχῆς ἔσται, εἴπερ φύσει κινήσεως μετέχει.

commentators have been misled into thinking.¹⁶² The logic of these examples only implies that, if φ is predicated of X *per accidens*, then φ cannot be the essence of X .¹⁶³

Thus, although Aristotle is constructing an analogy such that: (I) being-moved is to (II) soul as (III) being-moved is to (IV) properties of a body, the relevant characteristic of the pair (II) and (IV) is not a *general inability* to be a subject of attributes, but rather, a *specific inability* to be a *per se* subject of a *certain type of attribute*, namely, the attribute of being-in-motion, and by entailment, being-in-space.

Whiteness, for instance, whilst certainly not a ‘thing’ in the sense of a three-dimensional physical object, is the subject of a number of attributes, such as ‘being a colour’, ‘being lighter than blue’, and even a subject of causal attributes, such as ‘cause of the visual perception of whiteness’. For this reason, even if it is false to say that the soul is a spatial object subject to being-moved, it is still philosophically open for Aristotle to conceive of soul as (a) a subject of attributes, whether descriptive or causal, and as (b) belonging *either* to the class of properties (for example, qualities, quantities, etc.) which depend for their existence upon a substantial subject, *or* to the class of substantial non-extended subjects which can cause motion whilst remaining

¹⁶² For example, Witt (1992, 77-79). Hicks (1907, 244) goes so far as to say: ‘This, be it remarked, is precisely the way in which, on A.’s own theory, soul is moved, viz. as being practically the form of a concrete living thing (ζῷον ἔμψυχον or σύνολον) which has motion.’ This use of ‘form’ suggests that soul is only the ‘shape’ of the body, not the primary efficient cause of the motion of the concrete living thing. Cf. *Phys* 1.2, 185a20-26, where soul, man, and horse, are given as examples of οὐσία, as opposed to quantity, quality, and the other categories.

¹⁶³ How the predication structure works in respect of predicating motion of a subject vs. its attributes, is explained by Aristotle in *Phys.* 5.1, 224a21-30. Aristotle’s example here aligns with his first example of motion *per accidens*, where he explains that we can say that ‘something musical walks’, but only because musical is said *per accidens* of a certain man. Compare the discussions of *per se* and *per accidens* causes in *Phys.* 2.3, 195a-195b3, and *Phys.* 2.5, 197a14-15.

unmoved, namely, the class of unmoved movers, which do not need to exist in a subject.¹⁶⁴

2.5 *The First Horn Continued: Natural and Forced Motion*

Aristotle continues his analysis of the first horn of the dilemma with two further questions about the soul's presumed natural motion. He writes:

Still, (i) if it moves by nature (φύσει), it can be moved by force (βίᾳ), and (ii) if by force, by nature. (iii) The same reasoning holds for the forms of resting (ἡρεμίας). For (iv) that state towards which (εἰς ὃ) something is moved by nature, is that state in which (ἐν τούτῳ) it rests by nature. Similarly, (v) that state towards which something is moved by force, is that state in which (ἐν τούτῳ) it rests by force.¹⁶⁵ Even (vi) if we wanted to, it is not easy to form an image (πλάττειν) of what sorts (ποῖαι) of forced rests and motions will belong to soul. Still, (vii) if the soul is moved upwards, it will be fire, but (viii) if

¹⁶⁴ Pace Barnes (1972). Cf. Strawson (2006, 87ff), who distinguishes between material or M-predicates, and personal or P-predicates, and argues that inanimate objects (e.g. a chair) are the subject of M-predicates, but not P-predicates (e.g. 'is in pain'), although persons are the subject of M-predicates (e.g. 'is five foot tall') and P-predicates. Similarly, Aristotle is arguing that being-in-motion predicates – call them B-predicates – are not able to be predicated of the soul, *not* that soul can't be the subject of *any* class of predicates.

¹⁶⁵ Hett (1986, 33), Smith (1931), and the ROT (1984) misleadingly translate τούτῳ as 'the place', thus blurring the logical distinction between Aristotle's first and second argument. Hicks (1907), although correctly translating ἐν τούτῳ as 'in any state', misreads the argument as being about the rectilinear motion of the four elements (1907, 244). This mistake is repeated by Polansky (2007, 89), who claims: '[...] Aristotle already seems to be speaking about motion and rest in terms of locomotion since compulsion applies most readily to locomotion.' However, it is clear from the *Physics* that the phrase εἰς ὃ, as well as the phrase ἐν τούτῳ, can refer indifferently to the end result of any kind of motion, whether qualitative, quantitative, or local. The phrase εἰς ὃ is first mentioned in *Phys.* 2.1, 193b18, as the form (μορφή) which a natural being tends towards, in contrast to the ἐξ οὗ, i.e. the matter or earlier state, out of which it changes. Later, in *Phys.* 5.1, 223a34-224b6, Aristotle again confirms that he means by the phrase εἰς ὃ the formal state that an item changes into, and gives the example of heat (τὸ θερμὸν) as the state εἰς ὃ a kindling log changes. Similarly, ἐν τούτῳ need not have a spatial sense. The relevant sense of this phrase appears in *Phys.* 5.6, 229b29-31, in the context of an argument which claims that every change is between a given state *A* and its opposite state *B* in which a thing remains (ἐν τούτῳ μόνῃ) once the change is over. This schema of natural change/rest is introduced as applying to *every* kind of motion at 229b26. Aristotle's immediate examples are again not spatial, but going towards and remaining 'in whiteness' and going towards and remaining 'in health'.

downward, earth; for (ix) these are the very motions of these bodies. (x) The same account will apply to the intermediate bodies [sc. water and air]. (DA 1.3, 406a22-30)¹⁶⁶

As with Aristotle's arguments in the Spatiality of Soul Argument and the Motion of Accidents Argument, the two problems for the Platonic definition of soul that Aristotle raises here are hardly justified apart from the theory of motion he works out in the *Physics*. Call his first argument the Forced Motion Argument:

1. Any *X* is moved towards an end-state, *S*, by nature *iff* *X* can be moved by force towards an end-state, *Q*, which is opposite to *S*. (i)-(ii)
2. Every end-state, *S*, which an *X* is moved towards by nature, is identical to an end-state, *R*, which *X* rests in by nature. (iii)
3. Any *X* remains in an end-state of rest, *R*, by nature *iff* *X* can be moved by force towards an end-state, *Q*, which is opposite to *R*. (iv)
4. Every end-state, *Q*, which an *X* is moved towards by force, is identical to an end-state, *Z*, which *X* rests in by force. (v)
5. There is no qualitative, quantitative, or spatial end-state, *S*, *R*, *Q*, or *Z*, to which, or from which, one can form an image of the soul being moved or resting in by nature or by force. (vi)
6. Thus, soul is not moved by nature. [Implied]

¹⁶⁶ ἔτι δ' εἰ φύσει κινεῖται, καὶν βία κινηθεῖη· καὶν εἰ βία, καὶ φύσει. τὸν αὐτὸν δὲ τρόπον ἔχει καὶ περὶ ἡρεμίας· εἰς ὃ γὰρ κινεῖται φύσει, καὶ ἡρεμεῖ ἐν τούτῳ φύσει· ὁμοίως δὲ καὶ εἰς ὃ κινεῖται βία, καὶ ἡρεμεῖ ἐν τούτῳ βία. ποῖαι δὲ βίαιοι τῆς ψυχῆς κινήσεις ἔσονται καὶ ἡρεμίας, οὐδὲ πλάττειν βουλομένοις ῥάδιον ἀποδοῦναι. ἔτι δ' εἰ μὲν ἄνω κινήσεται, πῦρ ἔσται, εἰ δὲ κάτω, γῆ· τούτων γὰρ τῶν σωμάτων αἱ κινήσεις αὗται· ὁ δ' αὐτὸς λόγος καὶ περὶ τῶν μεταξύ.

The first thing to note is that Aristotle's complaint that we cannot 'form an image' (πλάττειν) of the motions and rests of the soul (in premise 5) hearkens back to Aristotle's explication of his scientific method of inquiry in *DA* 1.1. There he claimed that the definition of the 'what-it-is' needs to be given κατὰ τὴν φαντασίαν, and that, if a definition of *X* does not give us knowledge of *X*'s *per se* attributes, or if it cannot help us to easily guess (εικάσαι) at *X*'s attributes,¹⁶⁷ such a definition will have been spoken 'dialectically and emptily'. The Forced Motion Argument shows that Aristotle has these scientific criteria in mind, and that he thinks that the Platonic definition of soul doesn't meet them.

The second thing to note is that the background of the Forced Motion Argument is again Aristotle's works on natural philosophy, and in particular, the discussions of *Phys.* 5.6 and *DC* 1.8. These works both argue that a natural state may be viewed either as a state *towards which* an object moves by nature or as a state *in which* an object rests by nature.¹⁶⁸ For Aristotle, this claim applies to all forms of motion or change, not just locomotive changes.¹⁶⁹ For instance, humans grow by nature towards a *quantitative* state of being a certain size, just as a sick animal alters by nature towards a *qualitative* state of health.

Thus, what Aristotle is alleging in the Forced Motion Argument is that, if the soul is moved by nature – in the sense that the soul moves itself towards/rests in some particular end-state *S/R* – we should at least be able to picture in *phantasia* (a) what this end-state *S/R* could be, as well as (b) the opposites of those states, *Q/Z*.

For example, if the soul were by nature a subject of *qualitative change*, then the soul might naturally be moved towards a state of being healthy. But if so, Aristotle

¹⁶⁷ *DA* 1.1, 402b25-403a2.

¹⁶⁸ *Phys.* 5.6, 229b23-230a7; *DC* 1.8, 276a22-26.

¹⁶⁹ This is the conclusion of *Phys.* 5.6, 230b10-11. Cf. Ross (1936, 636). Cf. *Phys.* 4.8, 215a1-6; *Phys.* 5.6, 230b5ff.

argues, there would also be some specifiable external condition which would hinder the soul's health or make the soul sick. Similarly, if the soul were by nature the subject of *quantitative change*, it might grow to a certain length, and there would exist some specifiable external condition which could forcefully hinder the soul's natural growth.

However, for my purposes here, the crucial point of the argument, as I suggested above, is the conclusion, which suggests that none of the possibilities which I have just suggested seem to provide a good picture of how the soul is naturally moved, which means that the Platonic definition of soul as 'self-moving' does not meet Aristotle's scientific criteria for essential definitions.¹⁷⁰

Aristotle's final argument will try to show that, even if one tries to bypass the Forced Motion Argument by claiming that we *can* form a picture in *phantasia* of the soul as locally moving by nature, ascribing local motion to the soul ends up turning the soul into one of the four elemental bodies (earth, air, fire, or water). Call this argument the Elemental Motion Argument:

1. If (a) the soul, *S*, is in local motion by nature, (b) it will move towards one of the four natural places of local rest, *R*₁-*R*₄. (vii)
2. Each of *R*₁-*R*₄ belongs to the essence of one and only one of the four material elements, *E*₁-*E*₄. (viii)-(x).

¹⁷⁰ Aristotle's use of *πλάττειν*, as Hicks (1907, 245) notes, also evokes Plato's method of giving a fictional account of possible objects and their properties through imagistic representation (which is opposed to sensory and intellectual representation). In *Phaedr.* 246c6-d2, for example, Plato suggests that Greeks typically imagine immortal gods with a soul and a body, despite lacking a true intellectual grasp of the gods, or a visual perception of them. Similarly, in *Rep.* 9, 588b10-11, Plato claims to fashion a likeness (*εἰκόνα*) in words of a just and unjust soul, which is accomplished by the gradual building up of a vivid image of the soul as a many-headed beast.

3. So, S is moved towards R_1 iff S is E_1 , or S is moved towards R_2 iff S is E_2 ,
etc.¹⁷¹ [Implied]
4. But soul is not any of E_1 - E_4 . [Assumed]
5. Therefore, soul is not moved towards any of R_1 - R_4 . [3, 4]
6. Therefore, not (b). [5, 1, modus tollens]
7. Therefore, not (a). [6, 1, modus tollens].

Aristotle's argument here provides ancillary support to the conclusion expressed by the Forced Motion Argument. Aristotle admits that, amongst the categories of motion, one *might* imagine that the soul's natural motion is local motion, not only because local motion is perhaps the easiest sort of motion to imagine, but also because Aristotle believes local motion to be the motion least destructive of the substance of a thing.¹⁷²

However, the Elemental Motion Argument alleges that the consequence of accepting the soul to have a natural local motion is that one will also have to accept

¹⁷¹ Cherniss (1962, 405-6, n. 332) is rightly puzzled about why Aristotle neglects to mention here the Platonic idea that the soul's natural motion might be axial rotation, the doctrine of the *Timaeus* which comes up for criticism at *DA* 1.3, 406b26ff. He hypothesises that, because Aristotle himself argues in *DC* 1.2, 269a30-b17 that there is a fifth element – aether – whose natural motion is axial rotation, to raise the possibility that the soul might be moved in this way here would be, in effect, to allege that there is a way we can conceive of the soul moving by nature, namely, if it were aether. However, it does not follow, as he thinks, that if Aristotle suggested that the natural motion of the soul could be axial rotation, that he would have '[...] to admit either that the arguments of this section against the motion of the soul are invalid or that they are equally destructive of his own doctrine of a fifth essence.' Instead, all it would show is that, given the soundness of the arguments of *De Caelo*, Plato would need to explain why living bodies, as containing soul-aether, are able to rest and not move in a circle, whilst the heavenly bodies existing in aether never rest and always move in a circle. Cf. the criticism of Democritus at *DA* 1.3, 406b22-23. Moreover, as aether was seen to inhabit the region of the heavenly bodies and be 'above' the other four elements, it might also be thought to have a natural location, with the result that soul would need to be posited as existing by nature in the heavenly regions, but by force in living bodies. I thank Lindsay Judson for this latter suggestion.

¹⁷² *Ph.* 8.7, 261a20-23.

the soul as identical to one of the four elements, since, according to the doctrine of *De Caelo*, the essence of each of the material elements is defined in respect of its lightness and heaviness, and lightness and heaviness are defined in terms of natural resting places.¹⁷³

Aristotle's doctrine of the essence of the elements rests upon the idea that, because the universe is finite and spherical,¹⁷⁴ the place towards which the elements tend to move and rest in by nature can be determined in respect of the centre of the universe: 'down' is defined in reference to the 'place' at the centre of the world, whilst 'up' is defined in reference to the 'place' at the circumference of the universe. In this model, the element earth, which we would today say is pulled towards the centre of the earth by gravity, is, in Aristotle's system, understood to be moving 'down' towards its natural place of rest at the centre of the world. Similarly, the element fire, whilst burning, is understood to be moving upward towards its natural place in the heavens at the circumference of the world.¹⁷⁵ The motions of the intermediate elements are understood to be motions towards a place above or below the extreme places of earth or fire. Air, in Aristotle's system, rises above water but stays below fire, whilst water rises above earth but stays below fire and air.¹⁷⁶

Given this exhaustive classification, the Elemental Motion Argument alleges that, if the soul is moved locally by nature, then it is moved towards a determinate place in the universe. However, since, according to *De Caelo*,¹⁷⁷ anything that tends by nature to move towards the place of a material element will essentially *be* that

¹⁷³ Cf. *DC* 3.2, 300a20-300b8.

¹⁷⁴ Which theory, as Owen (1986b, 155) points out, is based upon the system of spheres proposed by Eudoxus and Callipus, students at the Platonic Academy.

¹⁷⁵ Cf. *Phys.* 4.5, 212b33-213a1; *Phys.* 5.6, 230b10-21.

¹⁷⁶ *DC* 4.4, 312a22-b19.

¹⁷⁷ *DC* 1.8, 276b7-11.

material element, if the soul *also* moves by nature towards an elemental place, it will also essentially be that element.

Even so, one might raise the objection that the natural motion of the soul is to be moved locally towards *whatever* place it wishes, and not a single elemental place. However, because nature for Aristotle is a principle of regularity, if the soul were moved towards whatever random place it pleased, then the soul's natural motion would be indistinguishable from its accidental motion, unless one posited a further reason why soul moves towards place *X* rather than place *Y*. However, admitting this already brings one within the scope of Aristotle's own view, which is that the soul is moved by what appears to be good.¹⁷⁸

2.6 *The First Horn Concluded: Resurrection from the Dead*

From here, Aristotle goes on to give a final argument against the definition of soul as self-moved. This thesis is independent of thesis of elemental motion. He argues:

Still, (i) since it is apparent (φαίνεται) that soul moves (κινεῖ) the body, it is right (εὐλογον) to infer that it moves the body by passing along to it the same motions which it itself is undergoing. But (ii) if this is so, then by converting (ἀντιστρέψασιν) the terms, it will also be true to that that motion which the body undergoes is the same motion as that the soul undergoes. But (iii) the body is moved with local motion (φορᾷ); (iv) the result is that the soul could change (μεταβάλλοι) *over and against* the body (κατὰ τὸ σῶμα) – either as a whole, or in respect of its parts (μόρια) moving their place (μεθισταμένη).¹⁷⁹ But (v) if this is possible, it could also, having departed

¹⁷⁸ Cf. *DA* 3.10, 433b13-19.

¹⁷⁹ Cf. Hick's (1907, 247-48) argument for bracketing the phrase μεταβάλλοι ἂν κατὰ τὸ σῶμα as a marginal comment, against Bonitz's conjecture of emending the text to κατὰ τόπον, which Ross (1956) adopts in the OCT, but argues against in his 1961 critical edition. Shorey (1901, 153) argues that κατὰ τὸ σῶμα should be translated 'within the body', appealing to sense B.I.2 of κατὰ in LSJ (1940). However, Aristotle's point here is that the soul moves the body with its *own* local motion, *not* that the soul is moved *by* the body's local motion. This means that the soul's local motions need not overlap with the motions of the body *at all*, such that soul should be

(ἐξελθοῦσαν) from the body, be capable of entering (εἰσιέναι) it again; but (vi) in this case it would follow that dead animals could be resurrected (ἀνίστασθαι). (DA 1.3, 406a30-406b5)¹⁸⁰

Call Aristotle's extended argument here the Resurrection Argument. It can be formulated as follows:

1. Any *X* that moves *Y* in virtue of its own motion, *Q*, will pass along motion *Q* to *Y*. (i)
2. Soul, *S*, moves the body, *B*, in virtue of its own motion *Z*. [Assumed]
3. But *B*, in virtue of *Z*, is in local motion *L*. (iii)
4. Thus, *Z* is *L*. (ii)
5. Any *X* that is in *L* can move in and out of the place, *P*, in which it resides. (iv)
6. Thus, *S* can move in and out of the *P* of the *B* it is in. (v)
7. Thus, *S* can move in and out of the *P* of dead *B*s and resurrect them. (vi)
8. But 7 is false, therefore 1, 2, 3, or 5 is false. [Implied]

Aristotle's argument, once again, seems flimsy if his doctrine of motion from the *Physics* is not taken into consideration. His claim in (i) that it would be right (εὐλογον) to infer that the soul passes along to the body the same motions which it itself is undergoing (assuming that it is indeed moving), is not mere guesswork.

able to move locally in a way opposite to any given bodily motion. Hence, κατὰ should be rendered with LSJ (1940) sense B.I.3: 'opposite, over against', which gives something close to what Shorey and Bonitz wanted, without simply repeating 406a32-b1 (which is the complaint of Hicks).

¹⁸⁰ ἔτι δ' ἐπεὶ φαίνεται κινουῦσα τὸ σῶμα, ταύτας εὐλογον κινεῖν τὰς κινήσεις ἃς καὶ αὐτὴ κινεῖται. εἰ δὲ τοῦτο, καὶ ἀντιστρέψασιν εἰπεῖν ἀληθὲς ὅτι ἦν τὸ σῶμα κινεῖται, ταύτην καὶ αὐτή. τὸ δὲ σῶμα κινεῖται φορᾷ· ὥστε καὶ ἡ ψυχὴ μεταβάλλοι ἂν κατὰ τὸ σῶμα ἢ ὅλη ἢ κατὰ μέρη μεθισταμένη. εἰ δὲ τοῦτ' ἐνδέχεται, καὶ ἐξελθοῦσαν εἰσιέναι πάλιν ἐνδέχοιτ' ἂν· τοῦτ' δ' ἐποιτ' ἂν τὸ ἀνίστασθαι τὰ τεθνεῶτα τῶν ζώων.

Aristotle is adapting an argument from *Phys.* 8.5, where he argues that, in the triad of (a) primary unmoved mover, (b) moving instrument of motion, and (c) moved object, the motion of the instrument will be of the same species and occur at the same time as that of the moved object.¹⁸¹ Since the Platonist position under consideration does not consider soul to fall under (a), and the body, as deriving its motions from the soul is what would properly fall under (c), Aristotle assumes that soul is best understood as a type of instrumental mover. If so, then one is able to infer from the motion of body, *qua* moved object, what the motion of the soul is (*qua* instrumental mover).

On this picture, the local motion which the soul passes on to the body is *prior* to, and does not depend upon, any motion that the body undergoes. If this is so, Aristotle argues, there is no obvious reason to think that soul *needs* to inhabit and move bodies. Rather, since soul can move itself, it shouldn't need to move a body at all. It should be able to continue to be what it is essentially, i.e. a certain kind of self-moving thing, even apart from the body. If so, then soul should even be able to leave bodies, and, after it has left, resurrect them from the dead. However, this event does not ever seem to occur in nature.

For both us and for the ancient Greeks, the idea that bodies can resurrect from the dead is a fantastic claim. Indeed, when the possibility of resurrection is countenanced by ancient Greek literature, it always occurs within a *supernatural* context.¹⁸² However, Aristotle's allegation is that, if the soul has its own natural

¹⁸¹ *Phys.* 8.5, 256b14-20. Cf. Ross (1962, 404 n. 330): 'Aristotle's notion can be formulated as follows: that which by its own motion sets another in motion must be moving with the same type of motion as that which it moves.'

¹⁸² Cf. Hom. *Il.* 24.755. Among the most powerful statements of the impossibility of bodily resurrection is Aesch. *Eum.* 647-651, where Apollo declares that, once the dust has soaked up a man's blood and he is completely dead, there is no resurrection (οὔτις ἔστ' ἀνάστασις), because Zeus has made no spells (ἐπώδας οὐκ ἐποίησεν) for reversing death, despite the fact that he is able to reverse all other things (τὰ δ' ἄλλα πάντ' ἄνω τε καὶ κάτω στρέφων τίθησιν [...]). The absurdity of natural resurrection is

locomotion (as the Platonists affirm), this seems to entail that resurrection would be not only a *natural* possibility, but also, that we ought to be able to observe it fairly often. This would seem to follow even if there were other constraints on resurrection, such as the body not disintegrating in the meantime. Aristotle's point is that, given the bare Platonic specification of soul as a (locally) self-moved mover, nothing seems to prevent soul being able to enter *any* body and make it move around (even if a decayed body could not function well in such a condition).

2.7 *The Second Horn: Soul is Moved Per Accidens*

Having run through various problems connected with the assumption that the soul is moved *per se*, Aristotle now turns to explore the second horn of the dilemma, whether the self-moving soul could be in motion *per accidens*. His argument is apparently meant to show that, if the soul is in motion only *per accidens*, then the definition of soul as 'that which moves itself' will not be an essential one, and hence cannot serve to explain the soul's characteristic powers.¹⁸³ Aristotle writes:

also assumed in Herod. *Hist.*, 3.62.2-3, the latter of whom is quoted by Hicks (1907, 249). However, the idea that resurrection is *supernaturally* possible is widely affirmed. Euripides' *Alcestis* provides the best known example. In this story, Heracles fights Death at Alcestis' tomb in order to bring her spirit back into her body, proving wrong the earlier claim by Admetus that, οὐκ ἔστι τοὺς θανόντας ἐς φάος μολεῖν (Eurip. *Al.*, l. 1076). The moral of *Alcestis* is, according to the Chorus, that the gods can find a way for unseen and unexpected things (i.e. supernatural things) to happen (cf. ll. 1160-63), even though men can't. Plato's myth of Er (*Rep.* 10, 614b2-21d3) also assumes the ability of the soul to return to the body, but Plato is at pains to point out that Er did not know *how* and in *what way* he was able to return to his decaying body (ὅπη μέντοι καὶ ὅπως εἰς τὸ σῶμα ἀφίκοιτο) (621b5). The impossibility of natural resurrection is also of course the background of the claims of early Christianity. Cf. Acts 17:32.

¹⁸³ This criticism has a dialectical background. In *Top.* 4, Aristotle argues that in proposed definitions we should investigate whether a proposed predicate falls under the category of what-it-is (τί ἐστὶ) or substance, or whether it falls under a non-substantial or accidental (συμβέβηκος) category. As an example of someone who defines a substantial thing by means of an accidental predicate rather than a substantial one, Aristotle refers to someone who defines the soul as 'τὸ κινούμενον ὑφ' αὐτοῦ' (*Top.* 4.1, 120b22-23). This definition is of course similar to the definition

But (i) in respect of motion *per accidens* (κατὰ συμβεβηκός), it [sc. soul] can certainly be moved by something different (ὑφ' ἑτέρου); (ii) for a living being might be pushed by force. But (iii) what has 'being moved from itself' in its essence (τὸ ὑφ' ἑαυτοῦ κινεῖσθαι ἐν τῇ οὐσίᾳ) cannot (οὐ δεῖ) be moved by another agent (ὑπ' ἄλλου), except *per accidens* (πλὴν εἰ μὴ κατὰ συμβεβηκός),¹⁸⁴ just as (iv) what is good *per se* (τὸ καθ' αὐτὸ ἀγαθόν) cannot be for the sake of something different (ἑτέρου ἕνεκεν), and (v) what is good on account of itself (δι' αὐτό) cannot be a means to something else (δι' ἄλλο εἶναι). But (vi) someone might more reasonably say it could be moved (κινεῖσθαι) by perceptible objects (ὑπὸ τῶν αἰσθητῶν), if it is moved (κινεῖται). (DA 1.3, 406b5-11)¹⁸⁵

This argument, although difficult to interpret, seems to make most sense as a follow up to the Forced Motion Argument. In that argument, Aristotle claimed that, if the soul is moved by nature, there will also be a way it can be moved by force. Here, however, Aristotle admits that there is a sense in which soul can be moved by force, namely, when a living being in which the soul resides suffers forced motion. Call this argument the Accidental Forced Motion Argument:

Aristotle assigns to his predecessors here, 'τὸ κινεῖν ἑαυτὸ', the essential difference being that the latter definition uses an active participle of motion which implies a passively moved object, whilst the former uses a middle/passive participle which implies an active mover. Aristotle argues that the substantive middle/passive participle 'thing moved' does not fall under the substantial category of τί ἐστὶ because 'thing moved' signifies something that falls under the accidental category of doing or suffering (ποιοῦν ἢ πάσχον), just as white does not signify *what* snow is, but rather *how* it is qualified (*Top.* 4.1, 120b27). Cf. Waterlow (1998, 162-163), who discusses the grammatical implications of these participles of motion *sans* their connection with accusative and genitive personal pronouns.

¹⁸⁴ Given line (vi), Aristotle may be implying that sensory perception, for Plato, insofar as it requires soul to be moved from things outside it, will turn out to be accidental to the soul. I thank Thomas Johansen for this observation.

¹⁸⁵ τὴν δὲ κατὰ συμβεβηκός κίνησιν κἂν ὑφ' ἑτέρου κινεῖτο· ὥσθεις γὰρ ἂν βίᾳ τὸ ζῶον. οὐ δεῖ δὲ ᾧ τὸ ὑφ' ἑαυτοῦ κινεῖσθαι ἐν τῇ οὐσίᾳ, τοῦθ' ὑπ' ἄλλου κινεῖσθαι, πλὴν εἰ μὴ κατὰ συμβεβηκός, ὥσπερ οὐδὲ τὸ καθ' αὐτὸ ἀγαθὸν ἢ δι' αὐτό, τὸ μὲν δι' ἄλλο εἶναι, τὸ δ' ἑτέρου ἕνεκεν. τὴν δὲ ψυχὴν μάλιστα φαίη τις ἂν ὑπὸ τῶν αἰσθητῶν κινεῖσθαι, εἴπερ κινεῖται.

1. Any *X* which has ‘being-moved from itself’ in its essence can only suffer motion from some *Y per accidens*. (iii)
2. Soul, *S*, has ‘being-moved from itself’ as part of its essence. [Assumed]
3. *S* is moved locally by force when the living being, *B*, is pushed. (ii)
4. Thus, *S* is only moved locally *per accidens* when *B* is pushed. (i)
5. Therefore, *S* is not moved locally *per se* when *B* is pushed. [Implied]

Aristotle’s point in this argument seems to be that, given that soul has been defined by the Platonists as what essentially moves itself, they cannot determine the sort of motion the soul has by appeal to the natural and forced motions of the living body, since the body’s motions, forced or natural, are not included within the scope of the soul’s essential definition as a self-mover.

Aristotle elucidates this claim further by appealing to a standard definitional distinction between things that are good *per se*, and things that are good in virtue of something else. His point is a simple definitional one: Any *X* which is laid down as being good *per se* is by definition understood as possessing its goodness apart from any other good *Y*, just as any *X* which is laid down as desirable *per se* is by definition understood as possessing its desirability apart from any other desirable *Y*.¹⁸⁶

Aristotle ends his argument with what seems to be a hylomorphic suggestion, which is that, if the soul is moved, it is moved by sensible objects. Filled out a bit more, Aristotle is suggesting that, if we define the soul in terms of its being moved,

¹⁸⁶ What Aristotle means by this is not that it is impossible for someone to desire a *per se* good for the sake of some other good, but only that, *if* someone desires some *per se* good *G* for the sake of some other good *Y*, then one is not desiring *G* for what *G* is *per se*. I take it that this does not rule out the idea that something can be good for several things *per se*, as long as these several things follow from what something is.

we should define it not in terms of being moved ‘from itself’, but in terms of its being moved by perceptible objects.¹⁸⁷

Because Aristotle does not elaborate on this claim here, it is enough to point out that it seems to hearken back to Aristotle’s theory, expressed in *Phys.* 7.2, that the distinction between animate and inanimate things can be drawn in terms of the ability of the former to have their sensory powers (αἰσθήσεις) altered by perceptible objects,¹⁸⁸ and to foreshadow his discussion of the same topic in *DA* 2.5.¹⁸⁹ During the course of *DA* 2.5, Aristotle will not so much contradict the thesis of the *Physics* that the perceptive part of the soul is moved,¹⁹⁰ so much as *clarify* that the kind of motion undergone by the sensitive part of the soul is not a standard kind of alteration (which standardly consists in the destruction of one perceptible quality by an opposite quality). Instead, Aristotle will argue that the perceptive part of the soul only suffers a ‘sort-of’ alteration (ἁλλοίωσις τις),¹⁹¹ thus preserving consistency between his claim in the *Physics* that the soul suffers a kind of change, and his claim in *DA* 1.3 that the soul cannot suffer motion. However, Aristotle does no more than suggest this possibility here.

2.8 *The Final Refutation: The Self-Destructing Soul*

Aristotle’s final argument against the Platonic definition of the soul seeks to show that, if the substance or essential activity of the soul consists in nothing more than the process of its moving itself, then, according to Aristotle’s theory of motion,

¹⁸⁷ It should be noted that this is not self-contradictory. A thing could be essentially such as to be moved by something else. Aristotle’s claim is that something can’t essentially be something that moves itself *and* be such as to be moved essentially by something else (e.g. the body).

¹⁸⁸ Cf. *Phys.* 7.2, 244b10-245a2.

¹⁸⁹ Cf. Burnyeat (2002); Johansen (1997).

¹⁹⁰ Pace Menn (2002, 88).

¹⁹¹ *DA* 2.5, 416b34.

soul will exist if and only if the soul negates its own existence. He argues for this unusual claim as follows:

But indeed, (i) if it [sc. soul] moves itself (αὐτὴ αὐτήν), it will be moved (αὐτὴ κινεῖτ' ἑαυτήν), with the result that, (ii) if every motion is a displacement of the thing moved in the respect in which it is moved (ἐκστασίς ἐστι τοῦ κινουμένου ἢ κινεῖται), then soul will be displaced from its essence (ἐξίσταται ἂν ἐκ τῆς οὐσίας), (iii) if it does not move itself *per accidens*, but the motion belongs to its very essence *per se* (ἢ κίνησις τῆς οὐσίας αὐτῆς καθ' αὐτήν). (DA 1.3, 406b11-15)¹⁹²

Call Aristotle's argument here the Essence Displacement Argument. It can be formulated as follows:

1. If soul, *S*, moves itself, then *S* is moved. (i)
2. If any *X* is moved, then *X* changes from being *F* to not being *F*.¹⁹³ (ii)
3. But *S* is moved in respect of its own essence (οὐσία).¹⁹⁴ (iii)

¹⁹² ἀλλὰ μὴν καὶ εἰ κινεῖ γε αὐτὴ αὐτήν, καὶ αὐτὴ κινεῖτ' ἑαυτήν, ὥστ' εἰ πᾶσα κίνησις ἐκστασίς ἐστι τοῦ κινουμένου ἢ κινεῖται, καὶ ἡ ψυχὴ ἐξίσταται ἂν ἐκ τῆς οὐσίας, εἰ μὴ κατὰ συμβεβηκὸς ἑαυτήν κινεῖ, ἀλλ' ἐστὶν ἡ κίνησις τῆς οὐσίας αὐτῆς καθ' αὐτήν.

¹⁹³ Cf. *Phys.* 4.12, 221b3; *Phys.* 4.13, 222b16; *Phys.* 6.5, 235b8-13. However, at *Phys.* 8.7, 261a20-21, Aristotle claims that locomotion dislodges a thing from its οὐσία the least.

¹⁹⁴ Shields (2007, 153) argues that οὐσία can be taken here either (a) existentially or (b) predicatively. However, he claims that on (b) the sort of change the soul undergoes will be of the standard sort that all physical objects undergo when they change without being destroyed (presumably, because a thing's οὐσία can be changed *per accidens*, insofar as the thing which has an οὐσία can change), whilst on (a) it will be unclear why the soul loses its being simply because it changes. I take it, however, that this is a false dichotomy. In *Metaph.* Z.6, 1031a17-18, Aristotle claims that (1) each thing (ἕκαστον) appears to be not other than its οὐσία, and that (2) a thing's essence (τὸ τί ἦν εἶναι) is its οὐσία. Since a thing which has an οὐσία entails its existing (cf. Z.6, 1031b2-6), the argument is best understood as using οὐσία in the sense of essence. This gives the result that we can take οὐσία both *existentially* and *predicatively*. For Aristotle, unlike Kant, does think that 'existence' is a predicate (and a thick one at that). Further evidence for this reading can be gathered from Philop. (*In de anima*, 113.10-17), who claims that soul is dislodged in 'respect of *being soul*', which surely refers to soul's essence (καὶ ἡ ψυχὴ ἄρα, καθὼς ψυχὴ ἐστὶ κινουμένη, ἐξίσταται τοῦ ψυχῆ εἶναι). Finally, Aristotle throughout seems to use

4. The essence of the S is ‘being moved from itself’. [Assumed]
5. Thus, when S exists, S necessarily changes from ‘being moved from itself’ to not ‘being moved from itself’. (ii)
6. Hence, whenever S exists, it will become not-S.¹⁹⁵ [Implied]

Whilst commentators have often recognised¹⁹⁶ that this argument appears to be a refutation of the claim of the *Phaedrus* that what is self-moving never abandons (ἀπολείπειν) itself,¹⁹⁷ they have not generally noticed that Plato himself, in places outside of the *Phaedrus*, seems to suggest something very like what Aristotle asserts here.

One place he does so in is *Rep.* 2, where he has Socrates argue that anything that ‘departs from its own form’ (ἐξίσταται τοῦ αὐτοῦ ἰδέας) is necessarily either (a) changed by its own agency (αὐτὸ ὑφ’ ἑαυτοῦ μεθίστασθαι), or (b) changed by the agency of something else (ὑπ’ ἄλλου).¹⁹⁸ Socrates goes on to argue that, in general, things in the *best* state, such as the bravest and most intelligent souls, are least able to be changed by something else.¹⁹⁹ However, he infers that, since there is no *better form*

οὐσία in the sense of essence, especially when he claims that the property of ‘τὸ ὑφ’ ἑαυτοῦ κινεῖσθαι’ is ‘ἐν τῇ οὐσίᾳ’ of the soul (*DA* 1.3, 406b7). Cf. Menn (2002, 97, n.20).

¹⁹⁵ Cf. Shields (2007, 152-154), who argues that the background of this argument is (a) the thesis of the *Physics* that form is a continuum and terminus of change, and that (b) forms, as continua and termini of changes, do not themselves change, and (c) the assumption (not stated in the *Physics*) that soul is a form. He argues that, ‘Aristotle’s point is the categorially driven observation that the soul, as form, is the qualitative character undergoing the change, whether conceived substantially or accidentally.’ This idea, I take it, is similar to Menn’s (2002, 97, n. 20) suggestion that, ‘The essence of something could *be to be a motion* of such-and-such a kind, but not *to be moved* in such-and-such a way.’

¹⁹⁶ For example, Philop. *In de anima*, 113.19, Hicks (1907), and Menn (2002, 97).

¹⁹⁷ *Phaedr.* 245c7-8. Cf. *Phys.* 6.5, 235b8-13, where Aristotle uses ἐξίσταται as synonymous with ἀπολείπειν.

¹⁹⁸ *Rep.* 2, 380d8-e1.

¹⁹⁹ *Rep.* 2, 381a3-4.

for the best things (e.g. the best souls, and the gods) to change *themselves* into, there is no reason why the best things would *ever* change themselves, for they would have to change into *worse* forms.²⁰⁰

Crucially, Socrates argues that such a self-change *cannot* be understood simply as a change in external appearance, like putting on a mask. Instead, he argues that, if a thing alters its form, then it changes into something which is worse than *itself*.²⁰¹ Such a claim implies that, for Plato, a thing's identity depends on its not altering in form. If so, then a thing which reflexively moves *itself* will also alter its own form (or, alternatively, move itself *out of* its own form), and thus change into something else.

Whilst someone might object that Plato's argument in the *Republic* is formulated in terms of something *altering* itself (and so, may not apply to other forms of self-motion), in the *Cratylus*, he gives a stronger version of this argument which appears to range over motion in general. In this dialogue, Socrates claims:

So how could that which is never in the same state *be* anything? For if there is ever a time it holds in the same state, it is clear that at that time nothing will be changing; but if it always holds in such a state and is always the same, how could this be changed or moved (μεταβάλλοι ἢ κινεῖτο), unless it departs from its own form (ἐξιστάμενον τῆς αὐτοῦ ιδέας)? (*Crat.* 439e1-5)²⁰²

The important ideas in this passage are that: (1) a thing can't always be changing and still be a determinate object, an idea which seems to be a problem for the concept of a self-moving soul, and (2) a thing can't be changed *at all* unless it is

²⁰⁰ *Rep.* 2, 381c1.

²⁰¹ *Rep.* 2, 381b10-11: Πότερον οὖν ἐπὶ τὸ βέλτιόν τε καὶ κάλλιον μεταβάλλει ἑαυτὸν ἢ ἐπὶ τὸ χεῖρον καὶ τὸ αἴσχιον ἑαυτοῦ;

²⁰² Πῶς οὖν ἂν εἴη τι ἐκεῖνο ὃ μηδέποτε ὡσαύτως ἔχει; εἰ γάρ ποτε ὡσαύτως ἴσχει, ἔν γ' ἐκεῖνῳ τῷ χρόνῳ δῆλον ὅτι οὐδὲν μεταβαίνει· εἰ δὲ ἀεὶ ὡσαύτως ἔχει καὶ τὸ αὐτό ἐστι, πῶς ἂν τοῦτό γε μεταβάλλοι ἢ κινεῖτο, μηδὲν ἐξιστάμενον τῆς αὐτοῦ ιδέας;

dislodged from its own form.²⁰³ This suggests that, even for Plato, being dislodged from a form is a basic way of understanding what motion is. However, if so, then Plato now seems to be committed to two propositions which are in tension with one another: (P1) The soul is always moving itself, and (P2) Whatever is (a) always in motion, or (b) is moved by itself, or (c) is moved by something else, is displaced from the form which fixes its identity.

Aristotle could hardly have been unaware of these arguments. Seen in this light, the Essence Displacement Argument may be read as the claim that, *by Plato's own standards*, if the soul moves itself – and soul is identical to its essence – then it can only move itself by changing into something different from, or worse than, its own essence. If so, then soul has been defined by the Platonists by a property that essentially entails the impossibility of its existence.²⁰⁴

2.9 *Soul as an Inner Principle of Motion and Rest*

The results of Aristotle's investigation of the definition of soul as self-moving have shown that, since the soul cannot be understood as something which is subject *per se* to being moved in any known category of perceptible motion, the Platonic definition of soul must be a 'dialectical and empty' one. Even so, Aristotle's

²⁰³ Cf. *Tim.* 50b7-9, where the receptacle is said never to depart (ἐξίσταται) from its own power of being receptive, despite always receiving various forms.

²⁰⁴ For Aristotle, and perhaps the Academy as well, Plato's argument appears to have been codified in the rule advanced at *Top.* 6.5, 145a4-12, that the differentia which defines a thing's essence (and which a thing must possess at all times of its existence), cannot be identical to a process (πάθος) of alteration, because such processes tend to displace the substance of a thing (πᾶν γὰρ πάθος μᾶλλον γινόμενον ἐξίστησι τῆς οὐσίας). Plato's own solution to this problem, put forward in the *Timaeus*, is to cast the self-motion of the soul as circular rotation, which can be seen as capturing both the idea that every part of soul is always displaced (out of a specific place on the circle), whilst at the same time, always the same (insofar as every displaced part of soul is immediately occupied by another part of soul). To refute this idea of psychological motion, however, Aristotle uses a separate set of arguments which are too complex to be discussed here. Cf. *DA* 1.3, 406b26-407b26.

arguments are not simply negative. They also delimit the range of entities that the soul might be.

Many commentators have rightly understood these criticisms to be expressing, in one way or another, the idea the soul isn't the *sort of thing* that can be moved *per se*.²⁰⁵ However, this thesis is not informative. There are plenty of beings in Aristotle's ontology which are not the sort of thing that can be moved *per se*. As Aristotle's own examples show – quantities, qualities, relations, places, and states also cannot be moved *per se*, but soul is presumably not any of these kinds of being. In general, objects in *any* category of being other than natural substances possessing magnitude are understood by Aristotle as incapable of undergoing motion *per se*.

In light of this, how do Aristotle's criticisms of the Platonic definition of soul help to lead us toward his own Hylomorphic Definition Soul? Given the number of times Aristotle has measured the explanatory power of the Platonic definition of the soul on the basis of premises drawn from his works on natural philosophy, the answer is to be found, I suggest, in reviewing Aristotle's concept of φύσις.

In *Phys.* 2.1, Aristotle defines things which exist *by nature* as things which possess an inner principle of motion and rest (γὰρ ἕκαστον ἐν ἑαυτῷ ἀρχὴν ἔχει κινήσεως καὶ στάσεως),²⁰⁶ and he defines *nature itself* as a principle and cause of being-moved and resting *to* those things in which it belongs primarily (ἀρχὴς τινὸς καὶ αἰτίας τοῦ κινεῖσθαι καὶ ἡρεμεῖν ἐν ᾧ ὑπάρχει πρῶτως).²⁰⁷

Given this understanding of nature, and the arguments Aristotle gives against the soul's ability to be moved *per se*, one might think that he has argued himself into a corner: *either* soul is to be classed as a *natural* object, or it is to be classed as an

²⁰⁵ For example, Shields (1988) and (2007), and Witt (1992).

²⁰⁶ *Phys.* 2.1, 192b13-14.

²⁰⁷ *Phys.* 2.1, 192b21-22.

unnatural object. But soul can't be a natural object, because natural objects are *per se* subject to motion and rest, but soul is not. Therefore, soul must be an unnatural object. But soul can't be an unnatural object, for then *no part* of soul can be studied by the natural scientist, contrary to the conclusions of *DA* 1.1.²⁰⁸

However, there is a third possibility lying in the background, which, although it is never made explicit in the *Physics*,²⁰⁹ seems to capture accurately what Aristotle is suggesting here. This is the idea that soul *is* the internal principle of motion and rest of living beings.²¹⁰ In fact, Aristotle has already hinted at this view at the outset of *DA* 1.1, where he claims that soul is a 'kind of' principle of nature in animals.²¹¹

Indeed, this suggestion fits with the claim of *Phys.* 8.4, that the nature of animals differs in an important respect from the nature of the material elements, namely, in that animals are self-movers, whilst the elements are not.²¹² For this reason, if soul is identical to the nature of a living being, then it seems that Aristotle can affirm that animal soul is that which *initiates* the self-movement and resting of animals without itself being moved *per se*, just as the unmoved movers inhabiting the heavenly bodies initiate motion without being moved *per se*.²¹³

²⁰⁸ Cf. *DA* 1.1, 403b9-19.

²⁰⁹ Of the eighteen times ψυχή is referred to explicitly in the *Physics*, it is never identified as the φύσις of an animal. In fact, it seems to be suggested that the soul is subject to natural motions of its own (which would entail that it has its *own* inner principle of motion) at *Phys.* 7.3, 247b17-18. However, soul, or some part of it, is claimed to be a principle of motion and a φύσις at *PA* 1.1, 641b4-9.

²¹⁰ As affirmed by Johansen (2007). If so, then Aristotle is in fact overturning his preliminary suggestion at *DA* 1.1, 402a7-8, that an investigation into soul will discover *soul's* φύσις.

²¹¹ *DA* 1.1, 402a6: ἔστι γὰρ οἷον ἀρχὴ τῶν ζῴων. Following Johansen (2007) and (2012, 85), I take it that οἷον is meant to be vague, as Aristotle does not yet wish to assert this claim until other competing claims have been investigated.

²¹² *Phys.* 8.4, 255a5-10. Furley (1994) is a *locus classicus* on this subject.

²¹³ Pace Cornford, who, in the Loeb translation of the *Physics* (1929, 108, n. c), attempts to infer from the fact that nature is a principle of being moved (κινεῖσθαι), that it is 'not a principle of *initiating* motion from within'. However, this is to misunderstand the logic of Aristotle's claim. The act of being-moved which nature is

This suggestion should not be shunned. As I show in the following chapters, Aristotle consistently claims that soul, even whilst unmoved, seems to possess the power to initiate motion, at least in animals which can be classed as self-movers.²¹⁴ However, Aristotle has yet to identify soul with either a principle of nature, or nature in the sense of form. Instead, his arguments have only shown that the Platonic definition of soul neither functions as a good definition of soul, nor provides an adequate explanation of how the soul moves the body. However, his arguments have strongly indicated that the route towards hylomorphism begins with the idea that soul is not a natural object or material element, but an inner principle of such a natural object, able to cause certain forms of motion and rest in that object.

2.10 Conclusion

I have argued above that the reason why Aristotle takes the time in *DA* 1.2 to present the reasoning which led his Platonist predecessors to infer self-motion as the soul's first principle is because he wants to treat their definition of soul as one which is meant to be explanatory of the soul's characteristic attributes.

I then argued that, in *DA* 1.3, Aristotle attempts to test the adequacy of this definition by drawing out its consequences. By doing so, Aristotle is able to show that the Platonic self-moving soul, whether considered to be in motion *per se*, or in motion *per accidens*, entails a number of unwanted consequences which are in conflict with

a principle *of* is predicated *of the things which are moved*, not of the principle itself. Since nature is the first principle of a natural thing's being moved, the formulation is best read as ambiguous between (a) nature as initiating from within the being-moved and being-brought-to-rest of the natural object, or, (b) nature as providing a capacity for the object's being-moved or brought-to-rest from without. In fact, Aristotle accepts that nature is a principle in both of these senses. Cf. Kelsey (2003).

²¹⁴ For a defence of Aristotle's identification of living things with 'self-movers', cf. Johansen (2012, 88-89), Berryman (2002), and Morison (2004).

natural science. For this reason, the Platonic definition of soul neither produces knowledge of, nor facilitates an easy guess about, the soul's characteristic properties.

Amongst the problematic consequences that follow from the Platonic definition of soul is that soul either turns out to be a material element, having its own inner principle of motion and rest,²¹⁵ or, it turns out to be something which destroys its own essence, at least according to the doctrine of motion set forth in Plato's *Republic* and *Cratylus*.

Finally, I argued that the tendency of Aristotle's exploration of the consequences of the Platonic theory of soul suggests that, if soul is neither a supernatural being, nor a natural being, and yet, is still a subject investigated by natural science, soul must itself be a principle *of* natural beings. I concluded that, only in this way can Aristotle preserve the idea that soul (a) cannot be moved *per se*, (b) can be moved *per accidens*, and (c) can be treated by the science of nature. This result, however, begins to prepare the path towards the Hylomorphic Definition of Soul, whilst also affirming the soul's status as an efficient cause of an animal's local motion, as suggested by the Hylomorphic Causality Thesis.

²¹⁵ Cf. Cherniss (1962, 412): 'To be sure, if it be granted that motion can exist only in a subject which is being moved (*Phys.* 202a13-14) and that such a subject must be quantitatively divisible (*Phys.* 240b8-241a26), there can be no true self-mover and no soul can be in motion; but these very premises of Aristotle's demonstration only emphasize the fact that it restricts itself to refuting the possibility of a corporeal self-mover or a soul in physical motion [...].'

The Principle of Attunement: The Harmony Theory

But the celebrated characteristics of numbers and their contraries, and generally the mathematical relations, if we view them as some do, making them causes of nature, seem to escape us; for none of them is a cause in any of the senses that have been distinguished in reference to the first principles.

—Aristotle, *Metaphysics* 1093b7-11

3.1 Introduction

In chapter 2, I showed how Aristotle follows his method of scientific inquiry in testing out the explanatory power of the Platonic definition of soul as a self-mover. In this chapter, I show that in *DA* 1.4, Aristotle continues his scientific inquiry into the soul's essential definition by testing out the definition of soul as a certain harmony or attunement (ἁρμονία) of bodily opposites.²¹⁶ This theory is introduced as follows:

And (i) another certain opinion has been handed down concerning the soul, which is no less persuasive to the many than any of the other accounts spoken about the soul, but has received as it were a public examination in the common discussions. For they claim that (ii) the soul is a certain type of harmony; for (iii) they say that harmony is a blending (κρᾶσιν) and composition (σύνθεσιν) of opposites, and (iv) that the body is composed (συγκεῖσθαι) from opposites (ἐξ ἐναντίων). (*DA* 1.4, 407b27–32)²¹⁷

²¹⁶ This theory may be the one Aristotle refers to at *DA* 1.2, 405b23-24. Despite its linguistic connections to the English word 'harmony', the Greek word ἁρμονία does not refer to musical sounds, but to the *state* of being attuned, or the *mode* of something's attunement, irrespective of whether or not a μέλος is sounding. Cf. Caston (1997, 319–20) and Gottschalk (1971, 180). On the origin and development of this term in Greece, cf. Ilievski (1993).

²¹⁷ Καὶ ἄλλη δὲ τις δόξα παραδέδοται περὶ ψυχῆς, πιθανὴ μὲν πολλοῖς οὐδεμιᾶς ἦττον τῶν λεγομένων, λόγον δ' ὥσπερ εὐθύνοις δεδωκυῖα κἂν τοῖς ἐν κοινῷ γεγενημένοις λόγοις. ἁρμονίαν γάρ τινα αὐτὴν λέγουσι· καὶ γὰρ τὴν ἁρμονίαν κρᾶσιν καὶ σύνθεσιν ἐναντίων εἶναι, καὶ τὸ σῶμα συγκεῖσθαι ἐξ ἐναντίων.

Although the historical origins of the harmony theory of the soul are obscure,²¹⁸ it is clear that Aristotle's scientific interest in it has its source in Plato's criticism of the same theory in the *Phaedo*. However, the motivations driving Aristotle's criticism of the harmony theory are strikingly different from Plato's own. In the context of the *Phaedo*, the arguments offered against the harmony theory belong to Socrates' efforts to defend the possibility of the soul's immortality.²¹⁹ In that context, were the harmony theory to be true, it would mean not only that Socrates' hope for immortality was ill founded, but also, that the theory of recollection – which requires the soul to exist both prior to and after the body's dissolution – is a sham.

The psychological stakes do not seem to be nearly as high in Aristotle's treatment of the harmony theory. Instead, his motivation for introducing it can be inferred from the closing remarks of *DA* 1.3, where he gives a summary judgement of what he claims to be the fault of most of his predecessors' definitions of the soul, namely, that they placed the soul in a body without adding to their definition of soul (a) the cause on account of which (διὰ τίν' αἰτίαν) soul is in the body, and (b) the state that the body must be in to have soul (πῶς ἔχοντος τοῦ σώματος).²²⁰

The harmony theory, at least upon an initial reading, seems not to fall prey to either of these criticisms.²²¹ Insofar as the soul is identified with a harmony, and the body can be arranged in such a way as to produce or be such a harmony, the harmony

²¹⁸ Cf. Guthrie (1962). Cornford (1922, 146) notes that Plato and Aristotle are the earliest ancient authors to predicate harmony of bodily opposites (as opposed to numbers or ratios). Notably, Plato, in *Rep.* 443c, also seems to have held some version of a harmony theory, which, however, does not predicate harmony of the body, but only of the various parts of the soul. Cf. *DA* 1.2, 406b28–31, which also mentions a harmony in the circular world-soul. Cf. *Metaph.* A.5, 985b31–986a6.

²¹⁹ *Phaed.* 67d7–10.

²²⁰ *DA* 1.3, 407b13–17.

²²¹ Despite the fact that, as Philop. (*In de anima* 146.6–8) points out, the reported reasoning forms an invalid syllogism.

theory not only seems to provide the cause of why the soul is in the body, but also, a description of what state the body must be in to have a soul, namely, a state which has been produced from opposite elemental qualities. Thus, on its surface, the harmony theory seems to meet Aristotle's minimal criteria for giving a definition of soul which contains a middle term – harmony – which can explain at least the soul's existence in bodies composed of opposites.²²²

Given that a harmony seems to be a (kind of) 'form' of the body, interpreters of Aristotle have often found it difficult to pinpoint how exactly this theory differs from Aristotle's own hylomorphic theory of soul.²²³ Couldn't bodily opposites, or their mixtures, for instance, be viewed as bearing a potential for life, perception, or nutrition – especially given that Aristotle holds that living bodies *are* in fact made from mixtures of the elements, just as the harmony theory claims? And can't the 'fulfilment' or 'actuality' of these potentials just *be* the mathematical structure or ratio that these elements come to be in when living bodies are formed? Moreover, doesn't Aristotle himself suggest that a harmony is a form of the body when he likens harmony (συμφωνία)²²⁴ to the form or ratio (λόγος τις) which is definitive of the soul's perceptive capacity?²²⁵

Despite the *prima facie* resemblance of the harmony theory of soul to Aristotle's hylomorphic theory of soul, in this chapter, I shall argue that Aristotle's

²²² In agreement with Gottschalk (1971, 188).

²²³ The similarity between the two theories is noted by Hicks (1907, 263), and supported by Ross (1961, 195), Gottschalk (1971, 188), and Frede (1996). Polansky (2007, 103-104) is more cautious, stating that the harmony theory 'might be supposed very close to Aristotle's own'. He concludes that Aristotle borrows from the harmony theory only 'what is workable', without specifying exactly what is workable.

²²⁴ Generally, Aristotle seems to use συμφωνία to refer to a relationship between (actual or potential) sounds. Cf. *DC* 2.9, 290b12-29; *DA* 1.3, 406b30; *Top.* 4.3, 123a33-37; *Top.* 6.2, 139a32-140a2; *APo* 2.1, 90a19-23. On meaning of the adjective συμφωνός as applying primarily to number, cf. Barker (2007, 316ff).

²²⁵ First at *DA* 2.12, 424a25-32, then at *DA* 3.2, 426a27-b7. Cf. *DA* 2.11, 424a4-5. On these passages, cf. Ward (1988), Bradshaw (1987) and Barker (1988).

answer to all of the above questions is ‘no’. Instead, Aristotle will argue that the principle of harmony, whether arithmetical or bodily, is unable to account for *any* of the soul’s characteristic attributes. Despite this failure, Aristotle will end his critique with the suggestion that the harmony theory does get one thing right about the nature of the soul, which is that soul, like a ratio or composition of the elements, is essentially tied to the body, just as the body is essentially tied to the soul.

To show this, in the first part of this chapter, I offer an analysis of the first five arguments that Aristotle offers against the harmony theory. I claim that each of these arguments, in accordance with Aristotle’s method of scientific inquiry, is aimed at showing that one cannot scientifically deduce or explain the soul’s characteristic abilities on the basis of a harmony understood as either an arithmetical or bodily ratio.

In the second part of this chapter, I show that Aristotle’s parenthetical remarks about Empedocles are similarly scientific in nature, and aim to show that the latter’s psychology cannot account for the soul’s ability to be a ratio of the elements in living beings without sacrificing its ability to be an efficient cause of the motion of those beings.

In the final part, I argue that Aristotle ends his criticisms by suggesting a non-mathematical version of the harmony theory which points the way towards hylomorphism.

3.2 *Analysis of the Harmony Theory*

Having set forth in outline the basic justification of the harmony theory, Aristotle begins his criticism of this definition of soul thus:

So, on the one hand (i) a harmony is a certain ratio (λόγος τίς) of things mixed (μιχθέντων) or a composition (σύνθεσις) of those things, but (ii) the soul is not capable of being either of these. (DA 1.4, 407b32-34)²²⁶

Call Aristotle's first argument the Framing Argument. It can be expressed as follows:

1. A harmony is either a (a) ratio of things mixed or (b) a composition of those things. (i)
2. The soul is not capable of being either (a) or (b). (ii)
3. The soul is not a harmony. [Implied]

This argument relies upon the idea that a harmony can be understood generally as either *an arithmetical* structure that characterises the proportion of elements or elemental powers that characterise a particular mixture, or a *geometrical* structure that characterises objects whose parts have been put together in a particular way (e.g. on top of, beneath, stuck next to, etc.). Aristotle thinks that, regardless of which of these meanings one adopts, one will not be able to explain the soul's characteristic affections and activities.

Although the Framing Argument is valid, Aristotle's justification for accepting the second premise is unclear. It has been common since the ancient commentators (for example, Themistius and Philoponus) to suggest that Aristotle gives this argument first because he already takes it for granted that soul, but not a harmony, is a substance (οὐσία).²²⁷

²²⁶ καίτοι γε ἡ μὲν ἁρμονία λόγος τίς ἐστὶ τῶν μιχθέντων ἢ σύνθεσις, τὴν δὲ ψυχὴν οὐδέτερον οἷόν τ' εἶναι τούτων.

²²⁷ Hicks (1907, 266) takes this suggestion to be plausible. He is followed by Jaeger (1934, 42), who claims that the argument assumes the doctrine of the *Categories* that substance does not have an opposite. However, Jaeger is rightly criticised by Owen (1968a, 153), who points out that other categories (for example, quantity), and certain

However, this interpretation of the Framing Argument is unlikely. Even though Aristotle is aware of such an argument, having used one like it in his *Eudemus*, he nowhere appeals to such an argument in *DA* 1. Moreover, the fact that Aristotle declines to use an explicit οὐσία argument here suggests rather the opposite conclusion, namely, that Aristotle is not yet willing to commit to the doctrine of (formal) substance as the answer to the first puzzle about the soul's genus expressed in *DA* 1.1, 402a23-25.²²⁸ Instead, it seems that Aristotle is giving a general argument which he will justify later, just as he did at the outset of his argument against the Platonic definition of soul discussed in *chapter 2*.

3.3 *The Movement Argument*

This expectation is not disappointed. Aristotle's explicit reasons for rejecting harmony as a definition of the soul in the Framing Argument – in both the sense of a ratio of the mixture, and in the sense of a geometrical combination of objects – are given in the lines which immediately follow.²²⁹ Aristotle writes:

Moreover, (i) the power to initiate motion (τὸ κινεῖν) does not belong to harmony, but (ii) all assign this most of all to soul, as was said. (*DA* 1.4, 407b34-408a1)²³⁰

members of those categories, also do not have an opposite. Cf. *Cat.* 6, 5b11: Ἐτι τῷ ποσῷ οὐδέν ἐστιν ἐναντίον.

²²⁸ Jaeger (1934, 45) offers another possibility. He sees the absence of this argument in *DA* 1.4 as a sign that, after having written the *Eudemus*, Aristotle revised his understanding of the soul's substantiality to be 'midway between the materialistic view that the soul is the harmony of the body, and the Platonic view of the *Eudemus* that it is a substance of its own.' However, Owen (1968a, 152-53), points out that Aristotle could not both have believed in the Platonic theory that Forms – which *do* have opposites (e.g. *Phaed.* 75c, *Rep.* 475e-476a) – are the only real substances, and that *no* substance has an opposite.

²²⁹ Cf. Hicks (1907, 267), who cites with approval Bonitz's discussion of the connection of this passage to the argument which begins at *DA* 1.4, 408a5.

²³⁰ ἔτι δὲ τὸ κινεῖν οὐκ ἔστιν ἀρμονίας, ψυχῇ δὲ πάντες ἀπονέμουσι τοῦτο μάλιστα ὡς εἰπεῖν.

This second argument against the harmony theory can be expressed as a second figure syllogism in *Cesare*. It claims that there is an attribute which is recognised as belonging to soul which cannot belong to harmony. Call it the Movement Argument:

1. The power to cause movement does not belong to harmony. (i)
2. The power to cause movement belongs to the soul. (ii)
3. Thus, soul is not a harmony. [Implied]

Although this argument appears to be fairly straightforward, modern commentators have tended to vary widely in their explanations of why Aristotle thinks that the power to cause motion does not belong to harmony but does belong to soul. To adjudicate between these positions, there are two questions that must be decided: first, what is the *species* of motion that Aristotle assigns to the soul (but denies to harmony), and second, what kind of *cause* is the harmony serving as in respect of this species?

Some interpreters, such as William Charlton, argue that Aristotle has all the *per se* motions of a living body (including locomotion) in mind here, and that he accepts that a harmony of bodily opposites (and not the soul) is the efficient cause of these motions. According to him, what Aristotle denies to a harmony is only its ability to be the *final cause* of these bodily motions.²³¹

This interpretation understands the Movement Argument to assume implicitly the criterion laid out in *DA* 1.1, that proper definitions of the soul's $\pi\acute{\alpha}\theta\eta$ (which are movements) should include both material causes and final causes which are for the

²³¹ Charlton (1985, 136).

sake of something (τοῦδε ἔνεκα).²³² On this reading of the Movement Argument, the efficient causal power to initiate all forms of motion in the living body is understood to belong to a harmony, but not the final cause of this power.

Similarly, Michael Frede also accepts that harmonised bodily powers are the root efficient causes of all species of bodily motion (including local motion). For this reason, he thinks that Aristotle's objection in the Movement Argument must be understood as amounting to the claim that, even if one mentally collects up all such harmonised efficient causes, one still cannot explain the unity of the power to move at the level of the whole ensouled body.²³³

In contrast to these interpretations, which posit that Aristotle has all species of motion in view, but denies to a harmony not their efficient causality, but their final causality, other interpreters, such as Stephen Menn and Victor Caston, argue that in the Movement Argument Aristotle clearly ascribes to soul, but not to harmony, the ability to be an efficient cause of all of the living body's motions.²³⁴ Caston spells out Aristotle's commitment as a supervenience theory of mind. He argues that the Movement Argument alleges that the harmony theory entails epiphenomenalism about the mind's causal powers, and that Aristotle rejects this view.²³⁵

However, given Aristotle's awareness of the *Phaedo*,²³⁶ wherein it is argued that a harmony is imposed upon some physical body (such as a lyre's string) by an external efficient cause, but that a harmony cannot itself act as the efficient cause of either (a) something's becoming attuned, or (b) the exercise of the powers of that

²³² DA 1.1, 403a25-403b2.

²³³ Frede (1996, 101).

²³⁴ Menn (2002); Caston (1997).

²³⁵ However, at least two of Aristotle's followers – Dicaearchus and Aristoxenos – were reported by a number of ancient writers to have adopted just such an epiphenomenalist version of the harmony theory, despite the objections to it raised by Aristotle. Cf. Gottschalk (1971) and Caston (1997).

²³⁶ *Phaed.* 93a6-9.

attunement, it is likely that Aristotle is denying to a harmony, and ascribing to the soul, only an ability to be an efficient cause of local motion.

His point is only that a harmony *can't* move a lyre's strings despite being 'in' those strings, whilst a soul, being 'in' the body, *can* initiate the body's locomotion by means of decision.²³⁷ At this stage in the argument, it is unclear if Aristotle would agree that a harmony can directly cause other forms of motion in the body (for example, qualitative alteration, or growth and diminishment).²³⁸ At the least, Plato does not appear to make such a claim in the *Phaedo*.

3.4 *The Harmonising Explanation Argument*

However, Aristotle does go on to give an argument which concerns the explanatory connection between the causal attributes of the elements residing in a living body and the attributes of the soul. He writes:

But (i) it fits (ἀρμόζει) more with health to say it is a harmony, and generally the bodily virtues, than soul. (ii) This would be patently obvious if someone were to attempt to define (ἀποδιδόναι) the affections and works (τὰ πάθη καὶ τὰ ἔργα) of the soul by a particular harmony; (iii) for it is difficult to fit them together (ἐφαρμόζειν).²³⁹ (DA 1.4, 408a1-5)²⁴⁰

Call this third argument the Harmonising Explanation Argument:

²³⁷ Cf. DA 1.3, 406b24-25; *Phaed.* 99a5-b2.

²³⁸ At least, as I argue below, Aristotle does not seem to have a problem with the idea that a harmony of the elemental powers might put the body in a condition such as to be affected in certain ways that are required for certain soul activities, e.g. perception.

²³⁹ Although Aristotle seems to choose the term ἐφαρμόζειν in line (vii) for its amusing etymological connection to ἁρμονία, this term nevertheless carries a technical sense which means 'to fit or adjust facts to a theory'. Cf. Hicks (1907, 267).

²⁴⁰ ἀρμόζει δὲ μᾶλλον καθ' ὑγείας λέγειν ἁρμονίαν, καὶ ὅλως τῶν σωματικῶν ἀρετῶν, ἢ κατὰ ψυχῆς. φανερώτατον δ' εἶ τις ἀποδιδόναι πειραθεῖν τὰ πάθη καὶ τὰ ἔργα τῆς ψυχῆς ἁρμονίᾳ τινί· χαλεπὸν γὰρ ἐφαρμόζειν.

1. The affections and works of the bodily virtues, *V*, can be made to fit with harmony, *H*. (i)
2. The affections and works of soul, *S*, cannot be made to fit with *H*. (ii)
3. Thus, it is more fitting to say that *Vs* are *Hs* than to say *S* is *H*. (ii)

Amongst the commentators, Philoponus gives the fullest analysis of this argument. He thinks Aristotle is evoking a dialectical argument in the *Eudemus*, wherein he reports Aristotle to have argued:

He say that: ‘disharmony (ἀναρμοστία) of a body is opposite to harmony of a body, but the disharmony of an ensouled body is disease and weakness and ugliness, of which disease is disproportion (ἀσυμμετρία) of the ensouled body’s elements (στοιχείων), weakness is disproportion of its homoeomereous parts, and ugliness is disproportion of its organs. So, if disharmony is disease and weakness and ugliness, then harmony must be health and strength and beauty. But soul is none of these things, for I say that it is neither health nor strength nor beauty. For this reason even ugly Thersites had a soul;²⁴¹ therefore the soul is not a harmony’. (Philop. *In de anima* 144.30-145.7)²⁴²

This argument from the *Eudemus* relies upon a number of dialectical procedures from in the *Topics* for criticising definitions. The initial procedure, for instance, follows the dialectical rule of a specifying the contrary of a *definiendum* in order to eliminate its homonymous meanings, a procedure described in *Top.* 1.15.²⁴³ Here, the term

²⁴¹ If soul were identical to a harmony in the sense of health, strength, or beauty, Thersites, who lacked all three, could not be said to have a soul.

²⁴² τῇ ἀρμονίᾳ, φησί, τοῦ σώματος ἐναντίον ἐστὶν ἡ ἀναρμοστία τοῦ σώματος, ἀναρμοστία δὲ τοῦ ἐμψύχου σώματος νόσος καὶ ἀσθένεια καὶ αἰσχος, ὧν τὸ μὲν ἀσυμμετρία ἐστὶ τῶν στοιχείων ἡ νόσος, τὸ δὲ τῶν ὁμοιομερῶν ἡ ἀσθένεια, τὸ δὲ τῶν ὀργανικῶν τὸ αἰσχος. εἰ τοίνυν ἡ ἀναρμοστία νόσος καὶ ἀσθένεια καὶ αἰσχος, ἡ ἀρμονία ἄρα ὑγεία καὶ ἰσχύς καὶ κάλλος. ψυχὴ δὲ οὐδὲν ἐστὶ τούτων, οὔτε ὑγεία φημί οὔτε ἰσχύς οὔτε κάλλος· ψυχὴν γὰρ εἶχεν καὶ ὁ Θερσίτης αἰσχιστος ὢν· οὐκ ἄρα ἐστὶν ἡ ψυχὴ ἀρμονία.

²⁴³ *Top.* 1.15, 106a9-22. As an example of this rule, Aristotle explains that there is not one term which is opposite in signification to a homonymous term such as ‘sharp’, but rather multiple terms. Giving the correct contrary of ‘sharp’ depends on what ‘sharp’

contrary to ‘harmony’ in the phrase ‘harmony of an ensouled body’ will be different from the term which is contrary to ‘harmony’ in a phrase like ‘harmony of a lyre’.

In the argument that Philoponus reports, the idea is that, if ‘harmony of the ensouled body’ were the correct genus of soul, then one of the species of ‘the harmony of the ensouled body’ (i.e. health, strength, etc.) would have to be identical to soul. However, since none of these harmonies are necessary for something to be ensouled, Aristotle concludes that, if soul is a type of harmony, it is at least not a *harmony of the ensouled body*.²⁴⁴

On the basis of this passage, Philoponus interprets the Harmonising Explanation Argument as claiming that, once we explicate *all* the known species harmony, including, for example, *musical* harmony (for example, Lydian, or Phrygian harmonies), we can see that none of the soul’s attributes, such as anger, courage, etc., fall under any of these species of harmony, which is why they do not theoretically ‘fit’ with harmony.²⁴⁵ Philoponus thus interprets Aristotle’s argument about the affections of the soul as amounting to the following hypothetical syllogism:

1. If soul is a harmony, then it is one of the species of harmony.
2. The soul is not any species of harmony.
3. Therefore, the soul is not a harmony.²⁴⁶

is said in relation to. If one asks what the contrary of ‘sharp’ is in the phrase ‘sharp body’, the correct answer will be ‘dull’, but when one asks what the contrary of ‘sharp’ is in the phrase ‘sharp sound’, the correct answer will be ‘flat’.

²⁴⁴ Cf. *Rhet.* 1.5, 1361b7-22, where Aristotle gives a general definition of health as ‘the virtue of the body which enables it to be free from disease’, and then gives as examples of bodily virtues beauty (κάλλος), strength (ἰσχύς), stature (μεγέθος), and swiftness in running (τάχος).

²⁴⁵ Philop. *In de anima* 127.21–23. This is also the interpretation of Sophon. *In de anima paraphrasis* 25.27–31, except that he puts the objection in terms of the soul’s parts.

²⁴⁶ Philop. *In de anima* 147.20–22. Cf. *Top.* 4.3, 123a33–37, *Top.* 6.2, 139a32–140a2.

The only real problem with Philoponus' interpretation is that he seems to take the Harmonising Explanation Argument to be a dialectical argument which is working only with the common meanings of genus and species terms.

However, as I argued in *chapter 1*, Aristotle is following his method of scientific inquiry when he gives the Harmonising Explanation Argument, rather than giving a dialectical argument. The difference between the former method, and the latter, is that the former method tests whether a proposed definition can provide an explanatory middle term for a certain characteristic phenomenon, whereas the latter method can at most judge whether the terms of a definition are being used consistently with other terms within a common discourse.

If Aristotle is following the method of scientific inquiry here, then we need to find the explanatory middle term which shows why Aristotle thinks that the attributes of health, but not the attributes of soul, can be demonstrated (or explained) by the principle of harmony.

To do so, we need to see what sort of relation Aristotle thinks obtains between harmony and health. A good example of this relation can be found in *Phys.* 7.3, where Aristotle writes:

Still, we say that all the virtues reside in something and in relation to the state of something (ἐν τῷ πρὸς τί πῶς ἔχειν). For the virtues of the body, such as health (ὕγιαν) and vigour (εὐεξίαν), we posit as being in a blend (κράσει) and due proportion (συμμετρία) of warmth and cold, either in relation to themselves inside the body or in relation to the surrounding environment. (*Phys.* 7.3, 246b3-6)²⁴⁷

²⁴⁷ ἔτι δὲ καὶ φαμεν ἀπάσας εἶναι τὰς ἀρετὰς ἐν τῷ πρὸς τι πῶς ἔχειν. τὰς μὲν γὰρ τοῦ σώματος, οἷον ὑγίαν καὶ εὐεξίαν, ἐν κράσει καὶ συμμετρίᾳ θερμῶν καὶ ψυχρῶν τίθεμεν, ἢ αὐτῶν πρὸς αὐτὰ τῶν ἐντὸς ἢ πρὸς τὸ περιέχον.

Here, the principle of a ‘right proportion’ of warmth and cold in the body can be taken as equivalent to the idea of bodily opposites being ‘in harmony’.²⁴⁸ On the basis of the principle that health is a harmony of warm and cold blends in the body, one can demonstrate, for instance, that the body will undergo certain diseases when the harmony of warm and cold blends inside it is disturbed, such as when too much warm material predominates, or when too much cold material predominates. By analogy, the Harmonising Explanation Argument alleges that a principle of harmony should similarly be able to demonstrate *which* bodily opposites, and in what proportions, are identical to the soul and its powers, and which ones, when changed, will cause the soul and its powers to be destroyed.

If so, couldn’t a more sophisticated harmony theorist meet Aristotle’s challenge by defining exactly which elemental opposites, and in what proportion, produce the soul? For Aristotle’s Harmonising Explanation Argument to be justified, he needs to have a good reason in mind for why the qualities present in a bodily harmony are *in principle* unable to explain the nature of the soul’s active and passive attributes.

Indeed, given that Aristotle affirms that the elements which compose living bodies *do* have causal powers, such as dispositions to move in certain directions, to mix with other elements, and to heat and cool, among many others, and given that Aristotle will eventually affirm that the soul is the form of such a body, could not ‘soul’ for Aristotle be simply a higher level formal description of these independently specifiable lower-level elemental powers and processes?

²⁴⁸ Aristotle makes a similar claim about health being a *συμμετρία* at *NE* 10.3, 1173b23-28, but adds that this proportion consists in a range which be relaxed up to a certain point in someone without losing health.

Although such a reductionist view of soul was recognised by Aristotle, he nevertheless seems to decisively reject it in *GC* 2.6.²⁴⁹ He gives the reason for his rejection as follows:

But it is also absurd if the soul comes into being from [a mixture or composition of] the elements, or if it is one of the elements; for how will there be alterations (ἀλλοιώσεις) of the soul, such as being musical and again unmusical, or memory or forgetting? For it is clear that, if soul is fire, then the only affections (πάθη) belonging to the soul will be the ones belonging to fire *qua* fire, but if soul is a mixture, only *bodily attributes* (τὰ σωματικά) will belong to the soul; but none of the soul's attributes are bodily. However, the discussion of these things is the task of another theory. (*GC* 2.7, 334a10-15)²⁵⁰

Whereas contemporary philosophers of mind often locate an explanatory gap between a third-person account of the neuronal activities of the brain and a first-person account of the *qualia* experienced by consciousness,²⁵¹ here Aristotle posits a similar explanatory gap between psychological changes *qua* psychological and material changes *qua* material.²⁵²

This explanatory gap follows from Aristotle's theory of elemental change and mixture as set out in the *Physics* and *On Generation and Corruption*. Having established in *Phys.* 1.5 that everything that is generated comes to be from its opposite

²⁴⁹ Joachim (1922, 239) also notes the relevance of this passage to *DA* 1.4.

²⁵⁰ ἄτοπον δὲ καὶ εἰ ἡ ψυχὴ ἐκ τῶν στοιχείων ἢ ἓν τι αὐτῶν· αἱ γὰρ ἀλλοιώσεις αἱ τῆς ψυχῆς πῶς ἔσονται, οἷον τὸ μουσικὸν εἶναι καὶ πάλιν ἄμουσον, ἢ μνήμη ἢ λήθη; δῆλον γὰρ ὅτι εἰ μὲν πῦρ ἡ ψυχὴ, τὰ πάθη ὑπάρξει αὐτῇ ὅσα πυρὶ ἢ πῦρ· εἰ δὲ μικτόν, τὰ σωματικά· τούτων δ' οὐδὲν σωματικόν. Ἀλλὰ περὶ μὲν τούτων ἑτέρας ἔργον ἐστὶ θεωρίας.

²⁵¹ For example, Levine (1983); McGinn (1989); Searle (1997).

²⁵² I take it that Aristotle thinks that τὰ σωματικά refers to all the bodily and perceptible attributes that can be defined without reference to soul. However, this does not entail that any psychological attributes can be defined without reference to τὰ σωματικά. In fact, with the exception of intellect, Aristotle suggests in *DA* 1.1 that the class of psychological attributes will not be definable independently of bodily attributes. Here I am in close agreement with Charles (2009).

generally (i.e. from its determinate privation),²⁵³ in *On Generation and Corruption* Aristotle argues that, in order for a true ‘harmonious’ mixture to occur, an *X* and a *Y* must (1) come into contact with one another, (2) have characteristic attributes that are determinate privations of one another (for example: hot and cold, white and black),²⁵⁴ and (3) have their characteristic attributes equalized (ισάζη) rather than destroyed.²⁵⁵

When elemental bodies come together and affect one another in such a way that *neither* loses its original characterising power completely, Aristotle claims they form a mixed or composite body with intermediate qualitative powers, such as flesh and bone.²⁵⁶ Aristotle writes:

Thus, first the elements change into one another, but out of the elements flesh and bone and the other composite bodies come about, while the hot is coming about from the cold, and when the cold is coming about from the hot, and these elemental qualities arrive at mean qualitative state. For at that point there is neither [sc. hot nor cold], but the middle is on a ‘spectrum’ (πολὺ) and not indivisible. Similarly, even the dry and the wet and the other powers of this sort, in respect of a mean state, produce flesh and bone and the other composite bodies. (*GC*. 2.7, 334b23-29)²⁵⁷

Although Aristotle’s theory of mixture is controversial,²⁵⁸ in general, I take it that Aristotle would deny strict emergence, i.e. the idea that fundamentally new properties, not reducible to any lower-level properties, come into being or ‘supervene’

²⁵³ Cf. *Phys.* 1.5, 188b21-26.

²⁵⁴ Cf. *GC* 1.7: 323b29-324a9. Aristotle claims this is the case when an *X* and a *Y* have ‘the same [type of] matter’ (ἡ αὐτὴ ὕλη). Cf. *GC* 1.10, 328a20.

²⁵⁵ *GC* 1.10, 328a18-32.

²⁵⁶ Cf. Hussey (1991, 222).

²⁵⁷ Καὶ πρῶτον οὕτω τὰ στοιχεῖα μεταβάλλει, ἐκ δὲ τούτων σάρκες καὶ ὅστ᾽ αὖ καὶ τὰ τοιαῦτα, τοῦ μὲν θερμοῦ γινομένου ψυχροῦ, τοῦ δὲ ψυχροῦ θερμοῦ, ὅταν πρὸς τὸ μέσον ἔλθῃ· ἐνταῦθα γὰρ οὐδέτερον, τὸ δὲ μέσον πολὺ καὶ οὐκ ἀδιαίρετον. Ὀμοίως δὲ καὶ τὸ ξηρὸν καὶ ὑγρὸν καὶ τὰ τοιαῦτα κατὰ μεσότητα ποιοῦσι σάρκα καὶ ὅστον καὶ τᾶλλα.

²⁵⁸ The analysis that follows is in agreement with that of Bogen (1996).

upon certain material objects or processes.²⁵⁹ Instead, at least in *On Generation and Corruption*, Aristotle strongly suggests that all bodily properties can be reduced, in one way or another, to elemental properties. For instance, Aristotle thinks that, from the elemental properties of the moist and the dry, which are generously defined only in respect of their (a) being/not being determinable by something else and (b) being/not being able maintain a limit, one can derive the properties of being ‘fine’, ‘course’, ‘viscous’, ‘brittle’, ‘soft’, and ‘hard’.²⁶⁰

How does this reductionism about bodily mixtures apply to the harmony theory of soul? The answer is that, since Aristotle is seeking a scientific definition of the soul from which one can construct explanatory syllogisms of the soul’s characteristic attributes, in order for a harmony of bodily opposites to be explanatory of the soul’s characteristic attributes (such as growing angry, or becoming musical), we would have to take some set of perceptible elemental powers (for example: hot and cold), and then discover which harmonic or mathematical proportion of these powers would produce a characteristic psychological attribute.

However, as Aristotle argues in *On Generation and Corruption*, the sort of characteristic attributes that are produced by elemental mixtures are *not* categorically new attributes – such as the ability to initiate locomotion from rest, or the ability to love, or hate, or think – but attributes that fall somewhere intermediate on a scale

²⁵⁹ In this, I am in agreement with Goldin (1996, 152 n.17), who writes: ‘[...] Aristotle’s position could not be that of an emergence theorist, who holds that an emergent property can be correlated to a physical property so that anything possessing it also has the emergent property but denies that the emergent property as such can be identified with or rendered intelligible on the basis of the physical property with which it is correlated. Aristotle holds that the theoretical primitives are the basic causes of things and that causal bonds can be revealed and rendered intelligible through scientific explanation.’

²⁶⁰ GC 2.2, 329b29-33. Aristotle concludes that, in respect of *all* the non-primary perceptible properties: Δῆλον τοίνυν ὅτι πᾶσαι αἱ ἄλλαι διαφοραὶ ἀνάγονται εἰς τὰς πρώτας τέτταρας. (GC 2.2, 330a24-25).

between the original pairs of opposing elemental qualities. Hot and cold, for example, can produce warmth, but not the colour green, because green is not a tangible quality.²⁶¹

It is for this reason, it seems, that Aristotle thinks that harmonised elemental properties provide some sort of explanation of health, but not the attributes which belong to soul. For example, if health is essentially a harmony of hot and cold elements in a living body producing a temperature of 37 degrees Celsius, one can explain *why*, when one has a fever, one isn't healthy. This is because one's body is too hot. However, if one believes that *soul* is a balance of hot and cold elements in a living body, one cannot similarly demonstrate why, when an ensouled being grows hotter or colder, they would think, hope, or love.

To put it yet another way, Aristotle's argument in *GC* 2.7 claims that if the first principle of the soul were an element like fire, then such a principle would only allow us to infer that the soul had attributes such as going from 'hot to cold', or from 'tending to go up quickly' to 'tending to go up slowly'.

Adding in more elements to the mixture does not change this basic idea. Aristotle's belief is that the changes of soul, such as going from unmusical to musical, presuppose an entirely different scale of opposites.²⁶² For this reason, even if such psychological changes are *correlated* with perceptible bodily changes, as Aristotle

²⁶¹ In general, what I claim here is in close agreement with the analysis of Bogen (1996).

²⁶² I take it that this is the case even if that which sees (*τὸ ὁρῶν*), 'is in a sense coloured' (*ὡς κεχρωμάτισται*) (*DA* 3.2, 425b22-23). Whilst it is certainly the case that the capacity of perception is receptive of the forms of perceptible qualities residing in bodies (cf. *DA* 2.11, 422b23-31), these qualities only explain the *content* of perception, not the nature of the awareness which is part of (or constitutive of) the capacity itself. This is why, in the end, Aristotle does think that there is more to perception than just a body's being affected. Cf. *DA* 2.12, 424b16-18, along with Burnyeat (1992a) and (1992b), and Caston (2005). However, for the view that psychological affections are not decomposable into material and immaterial components, cf. Charles (2008).

clearly believes they are,²⁶³ they cannot be demonstrated or explained on the basis of such perceptible changes alone.²⁶⁴ This is in fact one of the main theoretical reasons for Aristotle's thought that a formal cause, such as 'desire for revenge' must be added to the definition of any psychological phenomenon, such as anger, even if there are material changes – such as boiling of the blood – serving as the 'base' of such a change.²⁶⁵

In general, Aristotle will grant that an elemental power, e.g. 'the hot', can serve as an ancillary cause (συναίτιον) alongside the efficient causal powers of the soul.²⁶⁶ However, what Aristotle will not grant is that we can demonstrate the attributes of the soul (including its causal attributes) from the attributes of the elemental bodies, singly or in combination.²⁶⁷ In sum, Aristotle's Harmonising Explanation Argument claims that works and affections of the soul cannot be scientifically derived from the principle of a bodily harmony, and for this reason, the what-it-is of soul cannot be identical to a harmony.

3.5 *The Composition of Capacities Argument*

So far, I have shown that Aristotle formulates an initial wholesale rejection of the harmony theory of the soul in the Framing Argument without specifying the basis of his rejection. Then, in the Motion Argument, he criticises the harmony theory for

²⁶³ DA 1.1, 403a6-19.

²⁶⁴ Cf. Philop. *In de generatione et corruptione* 268.20-27.

²⁶⁵ DA 1.1, 403a29-403b3.

²⁶⁶ DA 2.4, 416a14.

²⁶⁷ Cf. Ackrill (1972/73, 132-33), who notes that the inability to derive new powers from material ingredients plus structure is a 'fairly deep source of trouble' for understanding Aristotle's hylomorphism. Burnyeat (1992a, 23) goes so far as to say that, in respect of mental functions, 'deduction from the "bottom up" is impossible'. Cf. Alex. *De Anima* 24.21-24, who claims that the soul's powers are categorially new powers that supervene upon a mixture, similar to how the new powers of medicinal drugs supervene upon a mixture of their components.

its inability to account for the soul's capacity to produce local motion. Following this, he gives the Harmonising Explanation Argument, a paradigm example of how Aristotle thinks that a first principle should function in explaining characteristic phenomena. In this argument, he asserts that health and the bodily virtues have a better claim to being a harmony than the soul does, because the principle of harmony can explain why a living body is in health and why it suffers disease, but not why a living body has soul, and not why it exercises or loses psychological powers.

From this, Aristotle proceeds to give two further arguments governing his initial rejection of the harmony theory in the Framing Argument:

Still, if we speak of a harmony we look to two things; (i) on the one hand, and most properly (κυριώτατα), [a harmony is] a composition (σύνθεσιν) of magnitudes (μεγεθῶν) which admit of movement and have a location, since whenever such magnitudes are fitted together, the result is that nothing extra which is of the same kind can be slotted in. Derivatively, on the other hand, (ii) we can also speak of the *ratio* (λόγον) that holds between things which have been mixed (μεμιγμένων) together. (iii) Although neither definition is a good account [*sc.* of the soul], the definition of harmony as a composition of the bodily parts (σώματος μερῶν) is exceptionally easy to criticise; for (iv) there are numerous and various types of compositions among the body's parts. So, (v) of what bodily part and how must (χρή) we suppose (ὑπολαβεῖν) intellect (νοῦν) to be a composition, or even the soul's perceptive capacity (αἰσθητικόν) or the desiring capacity (ὀρεκτικόν)? (DA 1.4, 408a5-13)²⁶⁸

Having disposed of the view that neither the soul's power of causing local motion, nor its active and passive attributes, can be explained by the principle of harmony *qua* mixture or composition of the basic elements, Aristotle gives a further argument for why a harmony *qua* a geometrical composition of *bodily parts* is also unable to serve

²⁶⁸ ἔτι δ' εἰ λέγομεν τὴν ἁρμονίαν εἰς δύο ἀποβλέποντες, κυριώτατα μὲν, τῶν μεγεθῶν ἐν τοῖς ἔχουσι κίνησιν καὶ θέσιν, τὴν σύνθεσιν αὐτῶν, ἐπειδὴν οὕτω συναρμόζουσιν ὥστε μηδὲν συγγενὲς παραδέχεσθαι, ἐντεῦθεν δὲ καὶ τὸν τῶν μεμιγμένων λόγον—οὐδετέρως μὲν οὖν εὐλογον, ἢ δὲ σύνθεσις τῶν τοῦ σώματος μερῶν λίαν εὐεξέταστος. πολλαὶ τε γὰρ αἱ συνθέσεις τῶν μερῶν καὶ πολλαχῶς· τίνος οὖν ἢ πῶς ὑπολαβεῖν τὸν νοῦν χρή σύνθεσιν εἶναι, ἢ καὶ τὸ αἰσθητικὸν ἢ ὀρεκτικόν;

as a first principle for the soul's capacities. Call this fourth argument Aristotle's Composition of Capacities Argument:

1. There are many compositions, C_1 - C_n , belonging to the body's parts. (iv)
2. If the soul, S , is a bodily composition C_x , each of the S 's capacities, Z_1 - Z_n , must necessarily belong to at least one C . [Assumed]
3. Neither S 's intellective power, I , nor its perceptive power, A , nor its desiring power, D , belong to any C . (v)
4. Therefore, S is not any C . (iii)

Although the logic of Aristotle's argument is valid, why does Aristotle think that no σύνθεσις of bodily parts can produce (or be) a psychological capacity? The argument is particularly difficult to understand from a modern perspective, since contemporary neuroscience now understands psychological capacities and activities both to belong to and be explained by various parts of the brain. For this reason, William Charlton argues that:

Such arguments, however, [...] are unsatisfying. 'Of what parts could we suppose the mind to be a composition?' (408a12) That question might reduce to silence a fourth century Greek but not a contributor to *Scientific American*.²⁶⁹

From such a perspective, it is easy to assume that a contemporary harmony theorist could claim, for instance, that Aristotle's ὁρεκτικόν is 'the neuronal composition of the frontal cortex in the brain', and that his criticism in the Composition of Capacities Argument is simply due to scientific ignorance.

²⁶⁹ Charlton (1985, 132).

However, we should not be quick to draw this conclusion until we understand what Aristotle is claiming. I argued above that Aristotle's theory of bodily mixture, on its own, does not allow him to explain how a new power results from a bodily mixture other than in terms of equalising (by degrees) the original bodily powers going into the mixture.

Aristotle has equally strong reasons for rejecting the bodily composition theory of the soul's powers. However, in the Composition of Capacities Argument, Aristotle is not concerned with a harmony's inability to demonstrate the soul's power to produce motion, nor with its inability to demonstrate the soul's works and affections, but rather with its inability to demonstrate any of the soul's basic capacities.

What are Aristotle's reasons for holding that a bodily composition cannot constitute a psychological capacity? It seems that Aristotle must be showing the difficulty of attempting to do psychology without making use of the final causes of the soul's capacities. Only by understanding what function a psychological capacity has, Aristotle thinks, can we come to understand what sort of bodies and bodily powers will be necessary to carry out this function. When we do have knowledge of such psychological functions, we can understand bodily materials or compositions as *hypothetically* necessary to carry out these functions.

Aristotle generally appeals to examples of artefacts to illustrate this idea. In the *Physics*, for instance, Aristotle argues that, if we understand that a saw is an object that is defined by its capacity to cut wood, we can use our understanding of that capacity or its deployment to guess at what sort of material composition the capacity must necessarily be in or make use of.

For instance, Aristotle argues that a saw, in order to actualise its capacity for dividing wood, must have hard teeth, which further implies that it must be made of some sort of metal, such as iron.²⁷⁰ However, the harmony as composition theorist doesn't have access to this sort of explanation; for if we understand only the material properties of an object, we cannot use our understanding of those properties to guess at what sort of capacity or function it has. For instance, if we stumbled upon an item which was made of iron and had jagged triangles on it, we could not, *sans* the concept of 'a capacity for cutting wood', determine this item to be a saw, as opposed to a piece of art, or a natural object.

In the *Parts of Animals*, Aristotle explicates this idea with the example of an axe, and makes an analogy between the hypothetically necessary parts of an axe and the parts of living bodies in a way that illustrates the problem alleged in the Composition of Capacities Argument. Aristotle argues that:

For just as it is necessary for an axe to be hard in order to cut, and if hard, it is necessary for it to be either bronze or iron, so also since it [sc. the living body] is an instrument (for whose sake each of its parts exist, and similarly the whole), it is necessary therefore for a body to be of such and such a quality and composed from such and such a material, if soul is to exist. (*PA* 1.1, 642a9-13)²⁷¹

This passage provides a way to understand the explanatory deficit alleged against the harmony theory in the Composition of Capacities Argument.²⁷² Whatever sort of composition of parts is picked out by the harmony theorist as explanatory of, or identical to, a soul capacity, it will provide no explanation of why this composition

²⁷⁰ *Phys.* 2.9, 200b5-8. Cf. Johansen (2012, 154-155).

²⁷¹ ὥσπερ γὰρ ἐπεὶ δεῖ σχίζειν τῷ πελέκει, ἀνάγκη σκληρὸν εἶναι, εἰ δὲ σκληρόν, χαλκοῦν ἢ σιδηροῦν, οὕτως καὶ ἐπεὶ τὸ σῶμα ὄργανον (ἐνεκά τινος γὰρ ἕκαστον τῶν μορίων, ὁμοίως δὲ καὶ τὸ ὅλον), ἀνάγκη ἄρα τοιονδί εἶναι καὶ ἐκ τοιωνδί, εἰ ἐκεῖνο ἔσται.

²⁷² Cf. Johansen (2012, 66-7).

necessarily produces a soul capacity, rather than, for example, another material capacity.

How, for example, can the composition, ‘fleshy appendages at the side of human heads’ necessarily imply or entail the psychological capacity for hearing, or the composition, ‘protrusion from the middle of a face’ imply the capacity for smelling, if one does not already have a prior knowledge of what hearing and smelling are?

At the very least, the variety of attributes that such material parts have will underdetermine what function they serve. Aristotle’s claim then is that no ‘lower level’ combination of material parts, with all their various powers, suffices to explain the existence of any psychological capacity. In fact, Aristotle thinks that the reverse is the case: only the existence of a psychological capacity will suffice to explain the existence of the material parts that are a means to its use.²⁷³

Again, Aristotle is not unaware that compositions (eyes, nose, ears, etc.) are *correlated* empirically with the soul’s capacities.²⁷⁴ Indeed, he would be happy to accept the claim from a harmony theorist that the capacity of vision is linked to the ‘attunement’ or composition of the eye. He himself thinks that the eye must be made of water in order to see, because colour – the object of sight – can only be actualised in a transparent medium. What Aristotle disagrees with is the idea that such a composition, *qua* material, could provide the means to demonstrate the existence of

²⁷³ *Phys.* 2.9, 199b34-200b8. This does not mean that an individual power to perceive (e.g. the power of touch), will exist temporally prior to its sense organ (e.g. the heart); however, it does mean that, without a psychological efficient cause (e.g. the ensouled-pneuma in the semen), an embryo which has a heart cannot be formed.

²⁷⁴ Aristotle thinks that we misidentify efficient cause and instrument of the efficient cause because an activity masks the distinction between cause and instrument of a cause when they are ‘near’ one another. But obviously, a craftsman or his craft is distinct from the saw or a drill that he makes use of. *PA* 2.8, 652b13-15: Ὅμοιον οὖν τὸ τὴν ψυχὴν εἶναι φάναι πῦρ, καὶ τὸ πρίονα ἢ τρύπανον τὸν τέκτονα ἢ τὴν τεκτονικὴν, ὅτι τὸ ἔργον περαίνεται ἐγγὺς ἀλλήλων οὗσιν.

the psychological capacity for vision (or hearing, or touch, etc.), without already knowing what these capacities are *for*.²⁷⁵ We might label this problem with the harmony theory an under-determination problem.

In fact, Aristotle's claim that material processes, *qua* material, under-determine what psychological capacities we have, has a number of modern analogues. For example, whilst modern neuroscience has done remarkable work in showing direct correlations between neural activity and mental functioning, it has not been successful at showing how mental acts (e.g. believing, logically inferring, etc.) can be produced by the chemical 'firings' of neuronal compositions, or even made more intelligible by such correlations.²⁷⁶

In this respect, Aristotle's response to a contributor to *Scientific American* who claimed that some capacity of the mind was identical to a composition in the brain would be no different than it is in *De Anima*: knowing what material composition a soul activity occurs *in* gives us no help in defining what the soul activity *is*. For this reason, Aristotle's preferred method is to identify what a psychological capacity is *for*, and then try to work backwards to see what sort of material compositions and powers could support this independently specifiable function.

If this is the correct interpretation of the Composition of Capacities Argument, then the failure that Aristotle alleges against the harmony *qua* composition theory is

²⁷⁵ Cf. Johansen (2012, 6-7): 'Proponents of the view that different mental faculties can be identified by discrete areas of the brain, or bumps on the head, would find little succour in Aristotle.'

²⁷⁶ Cf. Bennett and Hacker (2003, 362-365): '[...] a neural pathway in one's brain cannot have the logical consequences of believing something: namely, being either right or wrong about what one believes. For there is no such thing as a neural configuration's being right or wrong about the truth of a proposition...neuroscience cannot displace or undermine the explanatory force of the *good reasons* we sincerely give for our behavior, or invalidate the *justifications* we give for *rational* behaviour [...]' Bennett and Hacker label this a 'mereological' fallacy, which occurs when one incorrectly ascribes the psychological properties of persons to their organic parts (such as a brain).

that, because the harmony–composition theorist appeals to simple material necessity rather than hypothetical necessity in their explanation of the soul’s capacities (thus getting the explanatory priority between the compositions in the body and the capacities of the soul backwards), they are unable to demonstrate in an explanatory way which of the soul’s capacities will follow from a given synthesis of bodily parts or organs.

The upshot of this failure is that it implies what Aristotle’s answer will be to one of the puzzles that he raises in *DA* 1.1, namely, whether we should investigate the whole soul first, or its ‘parts’.²⁷⁷ Since Aristotle links the most general capacities of the soul to its ‘parts’,²⁷⁸ the Composition of Capacities Argument indirectly shows that the harmony theorist has run into methodological trouble by not taking the time to define the parts or capacities of the soul *before* it identified the whole soul as a harmony-composition.

3.6 *The Many Souls Argument*

Following on the heels of the Composition of Capacities Argument, Aristotle switches focus to harmony understood as the arithmetical structure that obtains between the elements that go into a mixture:

Similarly, (i) the account which asserts the soul to be the ratio of a mixture (τὸν λόγον τῆς μίξεως) is also absurd; for (ii) the ratio of the mixture of the elements (στοιχείων) in respect of which flesh is produced, and the ratio of the mixture of the elements in respect of which bone is produced, are not the same. (iii) So it will happen that the body will have many souls throughout itself, (iv) if indeed it is the case that these bodily parts have been mixed from

²⁷⁷ *DA* 1.1, 402b9-10.

²⁷⁸ In agreement with Johansen (2012, 52-3). Cf. *DA* 2.2, 413b6-7, and *DA* 2.2, 413b11-16.

the elements, and (v) the ratio of the mixture of these elements is a harmony and soul. (DA 1.4, 408a13-18)²⁷⁹

Whilst the Composition of Capacities Argument treated compositions *as material-wholes* as potentially identical to soul and its capacities, this argument understands the soul to be a *non-material* ratio or λόγος that exists ‘between’ the elements of such wholes. However, unlike the former argument, which argues directly that a harmony *qua* composition cannot demonstrate in an explanatory way any of the soul’s capacities, this argument is a *reductio* based upon an assumed definition of the soul. Call this fifth argument the Many Souls Argument:

1. Assume that ‘soul’ =_{def} the ratio, R , of the mixture of the elements in a living body, M . (v)
2. Every distinct part of a living body, P_n , such as flesh or bone, is identical to a distinct mixture of the elements, M_n . (iv)
3. Every M_n is defined by a distinct ratio, R_n . (ii)
4. There are many M s in a living body. [2]
5. Thus, there are many R s in a living body. [3-4]
6. Therefore, there will be many souls throughout the living body. (iii)
7. But there is only one soul in the body, therefore the 1 is false. (i)

There are a number of difficulties with this argument. Some interpreters see this argument as mere clever dialectic. William Charlton, for instance, argues that

²⁷⁹ ὁμοίως δὲ ἄτοπον καὶ τὸ τὸν λόγον τῆς μίξεως εἶναι τὴν ψυχὴν· οὐ γὰρ τὸν αὐτὸν ἔχει λόγον ἢ μίξις τῶν στοιχείων καθ’ ἣν σὰρξ καὶ καθ’ ἣν ὀστοῦν. συμβήσεται οὖν πολλὰς τε ψυχὰς ἔχειν καὶ κατὰ πᾶν τὸ σῶμα, εἴπερ πάντα μὲν ἐκ τῶν στοιχείων μεμιγμένων, ὁ δὲ τῆς μίξεως λόγος ἀρμονία καὶ ψυχή.

Aristotle's argument is a failure because, '[...] the theory is not that every ἀρμονία is a soul but that every soul is a ἀρμονία.'²⁸⁰

However, strictly speaking, the theory of the soul criticised by Aristotle in the Many Souls Argument does entail that every harmony – at least, every harmony that is a mixture of the bodily elements – is a soul.²⁸¹ Since it is unqualified, the scope of the definition of the soul reportedly held by the harmony–mixture theorist ranges over *all* ratios present in the elemental mixtures of any given living body.

However, what if the harmony theorist argued that, rather than the soul being a ratio of *one* of the body's mixtures, it was a 'super-ratio' of all the ratios of all the mixtures which composed a living body? In this case, a harmony theorist might define soul thus:

Soul =_{def} the ratio *S* of all the ratios R_1 – R_n , of the elemental mixtures, M_1 – M_n which produce all of a living body's parts, such that $S=R_1$ of M_{flesh} ; R_2 of M_{bone} ; ...: R_n of M_n .

Aristotle does not have a distinct argument against this kind of definition. Even so, he does have a response: if soul could be defined as a 'super-ratio' of all the ratios in a living body, a harmony theorist would still need to explain the soul's *particular* capacities by identifying them with particular ratios *within* the super-ratio.

²⁸⁰ Charlton (1985, 132). Polansky (2007, 109) rightly responds to Charlton by claiming: 'Yet, if only some *harmoniai* are souls, which ones? The theory leaves the question unanswered; only those *harmoniai* are souls that explain psychical operations, but how can they explain them?'

²⁸¹ Cf. *DA* 2.1, 412a27-28, where soul is not defined as 'the first fulfilment of a body' *simpliciter*. Rather, Aristotle's first common definition of the soul qualifies the ensouled body in question as one which 'potentially has life'. The former unqualified definition would entail that *any* bodily object (e.g. stone) would be ensouled.

However, for Aristotle, such an attempt is a non-starter, as it would be faced once again with the Composition of Capacities Argument.

In order to make real progress into the soul's definition, Aristotle seems to conclude, we cannot appeal to simple material necessity. Instead, what we need is a *teleological account* of how the soul is related to the ratio of the mixtures in a living body. This new understanding of 'account' (λόγος) begins to shine through more clearly in Aristotle's parenthetical remarks about Empedocles.

3.7 *Empedocles and the Harmony Theory*

Before completing his critique of the harmony theory, Aristotle stops to digress upon the fact that Empedocles also seems to face the problem alleged in the Many Souls Argument. However, in his remarks, he gives hints as to how Empedocles might have avoided this problem.

But (i) perhaps someone could at least demand an answer from Empedocles to the following questions: (ii) given that he says that each of the elements is in a certain ratio (λόγῳ), (iii) is the soul (a) this ratio, or (iv) is it (b) in fact something different which supervenes upon (ἐγγίνεται) the parts (μέρεσιν) [sc. of the body]? Moreover, (v) is Love (c) only by chance (τυχούσης) the cause of the mixture, or (vi) is a Love (d) a cause in respect of the ratio (κατὰ τὸν λόγον), and (vii) is Love (e) the ratio itself,²⁸² or (viii) (f) something beside the ratio (παρὰ τὸν λόγον) and different? (DA 1.4, 408a18-24)²⁸³

²⁸² This question is based upon Empedocles' depiction of Love as a part within mixed objects, which, Aristotle argues elsewhere, turns Love into a material cause. Cf. *Metaph.* Λ.10, 1075b1-4.

²⁸³ ἀπαιτήσῃ δ' ἂν τις τοῦτό γε καὶ παρ' Ἐμπεδοκλέους· ἕκαστον γὰρ αὐτῶν λόγῳ τινὶ φησιν εἶναι· πότερον οὖν ὁ λόγος ἐστὶν ἢ ψυχὴ, ἢ μᾶλλον ἕτερόν τι οὕσα ἐγγίνεται τοῖς μέρεσιν; ἔτι δὲ πότερον ἢ φιλία τῆς τυχούσης αἰτία μίξεως ἢ τῆς κατὰ τὸν λόγον, καὶ αὕτη πότερον ὁ λόγος ἐστὶν ἢ παρὰ τὸν λόγον ἕτερόν τι; ταῦτα μὲν οὖν ἔχει τοιαύτας ἀπορίας.

In this passage, Aristotle's introduces a new challenge to the harmony *qua* ratio theory, namely, what is the relationship between (1) soul, (2) the ratio of the elements, and (3) the efficient cause – Love – which makes the elements to hold in a ratio?

In fact, Empedocles seems to agree with Aristotle that the four bodily 'roots' – fire, air, earth, and water – *do* need an efficient cause to bring them together. Empedocles identifies this cause as the (elemental) force of Love.²⁸⁴ Empedocles also seems to agree with Aristotle that the root-elements do not, on their own, form the mixtures which produce living beings such as plants and animals, unless those elements are brought together in specific ratios. Aristotle's main disagreement with Empedocles is that he is unclear what the relationship is between (1), (2), and (3).

Evidence that these remarks are not mere dialectical asides can be found in *On Generation and Corruption*. In *GC* 2.6, Aristotle argues that, on the basis of his poems, Empedocles' Love can at most be understood as a force of association (σύγκρισις),²⁸⁵ but not a principle which teleologically organises living being into correct ratios.²⁸⁶ The implication of this for understanding Aristotle's questions to Empedocles here is that, despite the latter's suggestion that composites need to be put together in a certain ratio in order to produce functional parts, Aristotle thinks that his

²⁸⁴ Cf. DK B17 + Strasbourg Papyrus a(i) + a(ii) (=TEGP 41[F20]); DK B20 + Strasbourg Papyrus fr. C = (TEGP 44[F21]); DK B21 (=TEGP 45[F22]); DK B22 (=TEGP 46[F23]).

²⁸⁵ *GC* 1.6, 333b12-13: Ἀλλὰ μὴν οὐδ' ἡ φιλία καὶ τὸ νεῖκος· συγκρίσεως γὰρ <τὸ μὲν>, τὸ δὲ διακρίσεως αἴτιον.

²⁸⁶ *GC* 1.6, 333b9-11. Cf. *Metaph.* A.4, 985a10-13, where Empedocles (along with others) is claimed only to have grasped the material and efficient cause clearly. Guthrie (1965, 2.213) notes that, although Love, whether under the name of Aphrodite or Cypris, is a cause of 'all mixture', who 'joins things together (συναρμύζει, of Aphrodite in fr. 71.4)', '[...] it would seem that neither the noun nor the verb can be confined to the special sense of "combine in fixed proportion".' Aristotle's criticism that Empedocles appeals too often to chance is repeated at *Phys.* 2.4, 196a20-24, and *PA* 1.1, 640a19ff.

Love does not accomplish this ‘always or for the most part’, because he ascribes the creation of functional parts, too often, to *chance* (τύχη).²⁸⁷

Moreover, even if one allowed that Empedocles’ Love somehow has a limited teleological role in unifying the elements into well-functioning mixtures, Aristotle has another argument up his sleeve. In *Metaph.* B.4, he points out that Empedocles’ theory implies that the composites we now see will all eventually be *destroyed* by Love once it has gained enough power over Strife to produce a maximal mixture of elements in the divine One. On Aristotle’s (quite horrific) reading, every living thing will eventually be compacted and crushed into a single mixed object.²⁸⁸ This suggests that the teleological role of Love, if such it can be called, is aimed not at structured compositions, but at absolute unity.

For these reasons, Aristotle must believe that Empedocles is committed to option (c).²⁸⁹ Further, Aristotle also wishes to imply that, if Empedocles identifies soul as (a) an arithmetical ratio, or (b) as something which supervenes upon the parts of the body defined by this ratio, then soul cannot be the efficient cause of the body’s staying together, unless (e) Love is identical to the ratio and not (f) something

²⁸⁷ Cf. Lloyd (1966, 275): ‘[...] whether it was [Empedocles’] intention to suggest that the activities of Love are purposeful and directed towards a good end, is not fully clear.’ Cf. DK B59 (=TEGP [F73]). However, cf. Judson (2005) on Aristotle’s critique of Empedocles on this point.

²⁸⁸ *Metaph.* B.4, 1000b11-12. Cf. *Metaph.* A.5, 985a27-29, where Love ‘separates’ out the individual masses of elements.

²⁸⁹ It is hard to determine whether Aristotle thinks that (a) or (b) is a better answer. However, the answer that Aristotle will ultimately prefer is that the soul is the ‘account’ or form of the body, *and* it is something which supervenes upon the body’s parts. Insofar as the soul synchronically serves as the essential form of the living body (cf. *DA* 2.1, 412b10-11), it will be the ‘ratio’ or form of this body. But, given that new kinds of soul (e.g. perceptive soul) only come into first fulfilment once the requisite organs (e.g. heart) are formed in a developing embryo, Aristotle also thinks that soul is something that supervenes upon developing material parts (Cf. *DA* 2.1, 412b25-27). Cf. Johansen (2012, 12-17).

different from it (e.g. a supervening attribute). However, since Empedocles does not ever identify Love with the ratio itself, this route seems unavailable to him.

One might wonder, however, what Aristotle's problem is with choosing (a) or (b) alone? Why can't Empedocles affirm the soul to be a ratio, or some supervening entity, without being Love? Aristotle's only justification for thinking this to be a problem must be that he thinks that choosing (a) or (b) alone cannot help us to explain the soul's characteristic attributes and the soul's relation to the body.

For instance, if one thinks that the soul is Love, but something different from the ratio of the mixture of a living body, then the soul will be something which only supervenes upon different elements and their mixtures *at random*, and will not be something essentially connected to the structure and function of a living body, as it appears to be. However, if one thinks that the soul is a ratio of the mixture, but not Love, then the soul will have no efficient causal control over its elemental body, given that a specific ratio in the mixture (e.g. 2:4) is simply a mathematical proportion controlled by the amount of elemental qualities (2 parts fire: 4 parts earth) present in the mixture by Love's chance operations. However, the ability of soul to move the body locally is one of the phenomena that a good definition of soul needs to explain.

If this is the right diagnosis, then Aristotle is suggesting that the basic phenomena associated with soul require us to see soul as both related to the body's structure – seen here as a λόγος of the body's parts and mixtures – and to the final cause of these bodily elements coming together 'for the most part', and to the efficient cause of these elements acting as a unity once combined. These features already begin to suggest the Hylomorphic Causality Thesis discussed in the *Introduction to the Study*.

3.8 The Truth in the Harmony Theory

Having laid aside Empedocles, Aristotle finishes his discussion of the harmony theory by discussing two arguments in favour of it, each of which is highly suggestive of his Hylomorphic Definition of Soul. He writes:

But (i) if the soul is something different from the mixture, why is it taken away (ἀναιρεῖται) at the same time with the being of flesh (τῷ σαρκὶ εἶναι) and the being of the rest of the parts of the animal? In addition, (ii) since each of the parts does not have its own soul,²⁹⁰ and if the soul is not the ratio (λόγος) of the mixture, what is it which is destroyed (φθείρεται) when the soul has departed [sc. the body] (ἀπολιπούσης)? (DA 1.4, 408a24-29)²⁹¹

In this final argument, Aristotle shows that there is something right about the harmony theory, namely, that the existence of soul depends on the being of the animal body and its parts, and *vice versa*. His first question is based on the idea that, in a given living body, flesh will cease to function as flesh, and the body parts cease to function as body parts, simultaneously with the soul's departure from the body. This argument assumes that the destruction of the ratio which (a) makes a (uniform) mixture *be* flesh, and which (b) makes the (non-uniform) composition of the body's parts *be* body parts – the two senses of harmony he has previously defined – also causes the soul to be destroyed. Why, Aristotle asks, would the ratio which defines flesh and the body's parts have a destructive effect on the soul unless the soul was itself this ratio?²⁹²

²⁹⁰ This clause is added under the assumption that there cannot be a separate soul for each of the body's parts, which is assumed as absurd in the Many Souls Argument.

²⁹¹ εἰ δ' ἐστὶν ἕτερον ἢ ψυχὴ τῆς μίξεως, τί δὴ ποτε ἅμα τῷ σαρκὶ εἶναι ἀναιρεῖται καὶ τὸ τοῖς ἄλλοις μορίοις τοῦ ζώου; πρὸς δὲ τούτοις εἴπερ μὴ ἕκαστον τῶν μορίων ψυχὴν ἔχει, εἰ μὴ ἔστιν ἢ ψυχὴ ὁ λόγος τῆς μίξεως, τί ἐστὶν ὃ φθείρεται τῆς ψυχῆς ἀπολιπούσης;

²⁹² Since, for Aristotle, flesh cannot be flesh without the capacity for touch. A general statement of this principle, and its application to flesh, is found at *Meteor.* 4.12, 390a10-15.

His second question looks at this same phenomenon from the opposite direction. It asks, if soul is *not* the ratio of elements in a living body, what sort of thing could the soul be, given that its absence causes the body's parts to cease being able to function, and perhaps also the ratios which are conducive towards this functioning? Given this mutual interdependence of the functions of elementally composed bodies and soul, Aristotle's question is: what else could soul be but the ratio of the mixture?

This problem is made even more difficult by the fact that Aristotle *does* believe the soul to be the λόγος of the body. In *DA* 2.1, he argues that, just as the axehood (τὸ πελέκει εἶναι) of an axe serves as the λόγος and substance of an axe, and just as the capacity of sight (ὄψις) serves as the λόγος and substance of an eye (ὀφθαλμός), so also the soul is the λόγος and substance of the whole living body.²⁹³

Elsewhere, Aristotle even seems to assimilate Empedocles' understanding of a λόγος which defines the elements to his own doctrine of substance. At the end of *Metaph.* A.10, for example, he writes:

[...] even Empedocles says bone to exist in a ratio (τῷ λόγῳ), but this is the 'what-it-is-to-be' (τὸ τί ἦν εἶναι) and the substance (οὐσία) of the thing. But then, similarly, it is necessary also either for flesh and the other things to be the ratio (λόγον), or for nothing to be; for because of this, flesh and bone will be, along with each of the other things, and not on account of the matter, which he calls fire and earth and water and air. But if these things would have been stated by someone else, he necessarily would have agreed with them, but he did not speak clearly. (*Metaph.* A.10, 993a17-24)²⁹⁴

²⁹³ *DA* 2.1, 412b10-23.

²⁹⁴ [...] καὶ Ἐμπεδοκλῆς ὁστοῦν τῷ λόγῳ φησὶν εἶναι, τοῦτο δ' ἐστὶ τὸ τί ἦν εἶναι καὶ ἡ οὐσία τοῦ πράγματος. ἀλλὰ μὴν ὁμοίως ἀναγκαῖον καὶ σάρκας καὶ τῶν ἄλλων ἕκαστον εἶναι τὸν λόγον, ἢ μὴδὲ ἓν· διὰ τοῦτο γὰρ καὶ σὰρξ καὶ ὁστοῦν ἔσται καὶ τῶν ἄλλων ἕκαστον καὶ οὐ διὰ τὴν ὕλην, ἣν ἐκεῖνος λέγει, πῦρ καὶ γῆν καὶ ὕδωρ καὶ ἀέρα. ἀλλὰ ταῦτα ἄλλου μὲν λέγοντος συνέφησεν ἂν ἐξ ἀνάγκης, σαφῶς δὲ οὐκ εἴρηκεν. περὶ μὲν οὖν τούτων δεδήλωται καὶ πρότερον·

Given the closeness of these conceptions of λόγος, how can Aristotle remain justified in holding the harmony theory apart from his own doctrine of hylomorphism?

Given the arguments I have analysed above, the answer must be that Aristotle considers an *arithmetical* λόγος, advocated by the harmony theorists and Empedocles, to be unable to fulfil the explanatory role of the λόγος that Aristotle assigns to the natural scientist in *DA* 1.1.²⁹⁵ This sort of λόγος, used by a natural scientist to define physical entities, does not contain arithmetical ratios, but instead, contains specifications of a thing's material, formal, final, and efficient causes.

That Aristotle would see this kind of λόγος as obviously distinct from the harmony theorist's arithmetical λόγος is to be expected, given Aristotle's argument that arithmetical harmonies cannot cause the body to move (The Motion Argument), the argument that neither harmonised elemental attributes nor bodily compositions necessitate the existence of any of the soul's attributes or capacities (Harmonising Explanation Argument, and the Composition of Capacities Argument), and his argument that the arithmetical ratios that belonging to different elemental mixtures pluralise the soul (Many Souls Argument).

Taken together, these criticisms imply that soul must be an entity which is (a) motive, (b) something whose characteristic attributes are distinct from material attributes (even if dependent upon them), (c) something whose capacities are distinct from bodily compositions, and (d) something more unified than a collection of ratios that govern bodily mixtures.

²⁹⁵ *DA* 1.1, 403a24-403b3. However, this is not to say that Aristotle has no use for mathematical laws within the physical sciences. In fact, the opposite is true, as Hussey (1991) argues. Aristotle is only committed to the idea that mathematical ratios alone, or in combination with the material elements, are not sufficient to derive psychological properties or be the essence of soul.

These conclusions not only rule out mathematical form as first principle of soul, but also, they fit nicely with Aristotle's claim that a good defining account in psychology will need to make reference to a number of explanatory causes, rather than simply one or two. The harmony theorist, in virtue of understanding the soul as *only* a formal arithmetical or geometrical structure of material powers or bodies, is, according to Aristotle, unable to show how the λόγος of soul can function as a final or efficient cause.²⁹⁶ These functions, moreover, seem to be implied by the basic phenomena associated with soul, and stand in need of explanation.

The truth in the harmony theory then, in respect of Aristotle's final observations about the co-dependence of the parts of the body and the soul, is that certain bodily harmonies are at most *necessary* for the soul's continued existence, in concordance with Aristotle's hints that the soul's affections and works hypothetically necessitate the existence of certain bodily compositions, mixtures, and powers – but not *vice versa*. The mistake of the harmony theory then is that it takes bodily compositions, mixtures, and powers, to be *necessary and sufficient* for the existence of soul and its affections and works, whereas in truth, these conditions are *necessary but not sufficient*.

3.9 Conclusion

I began this chapter by pointing out that the harmony theory, at first glance, seems very close to Aristotle's own hylomorphism. I have tried to show, however, that this appearance is misleading. In following his method of scientific inquiry and testing out the consequences which follow from defining the soul as a harmony,

²⁹⁶ This is in accordance with Aristotle's statements at *DA* 1.1, 403b14-19. I take it that this is in agreement with Peramatzis (2011, 86-90). Cf. Aristotle's criticism of number-substance theories in, for example, *Metaph.* A.5, 985b 23-896a13; *Metaph.* A.8, 989b29-990a32. Cf. Langton (2000).

Aristotle has shown that soul cannot be identified with an arithmetical or geometrical harmony determined by lower-level material processes, as this definition does not facilitate a knowledge of any of the soul's attributes or capacities. Instead, he has indirectly suggested that if soul is a λόγος, it must be understood as a non-mathematical, dynamic, casually efficacious, and teleologically determined one.

I have tried to show that Aristotle paves the way towards this understanding of the soul first through the Framing Argument, which is then filled in by the Motion Argument, the Harmonising Explanation Argument, the Composition of Capacities Argument, and the Many Souls Argument. Then, through certain criticisms of Empedocles' psychology, I argued that Aristotle alleges that formal, final, and motive causes – all of which soul seems to function as – cannot all be accounted for by the harmony theory of soul.

Even so, at least one of these causes, the formal cause, can be. I have claimed that Aristotle ends his criticisms of the harmony theory with a suggestion that it get something right: it shows that soul needs to be understood as (a) a formal entity which is distinct from the elements, but also, as (b) needing the body as a hypothetically necessary condition of its existence. These observations take us further along the path towards the Hylomorphic Definition of Soul.

The Principle of Cognition by Likeness: Empedocles' Psychology

For all of them suppose thinking to be bodily in the same way as perception, and that we both perceive and understand like by like....

—Aristotle, *De Anima* 427a26-29

4.1 Introduction

In *DA* 1.2, Aristotle argues that nearly all his predecessors affirmed that ensouled things differ from non-ensouled things by (a) having an ability to move locally, or (b) by having an ability to perceive the world.²⁹⁷ In *chapter 2*, I showed how Aristotle follows his method of scientific inquiry in testing the definition of soul as a 'self-mover' to explain (a). In *chapter 3*, I showed how Aristotle tested out the principle of the harmony theory to explain the same phenomenon, but extended the range of phenomena in need of explanation to other motions and capacities thought to belong to soul, as well as to the soul's relation to the body. In this chapter, I shall show how Aristotle follows his method of scientific inquiry to test the ability of an Empedoclean principle to explain (b).²⁹⁸

Aristotle tells us that most of the predecessor theories meant to be explanatory of the soul's cognitive power were arrived at by thinkers who reasoned that, since all

²⁹⁷ *DA* 1.2, 403b25-28.

²⁹⁸ The reason that Aristotle classifies 'thinking' and 'perceiving' together here is that, in general, he thinks that his predecessors identified theoretical and practical thinking with perception, seen as a type of physical alteration of the body. In *DA* 1.2, 403a27-31, for instance, Democritus is said to claim that what is true (τὸ ἀληθές) is whatever appears (τὸ φαινόμενον), and Aristotle seems to take these 'appearances' to refer to the soul's perceptions of the world, in contrast to its intellectual cognition (νοῦς) of it. Cf. *DA* 3.2, 427a19-29, as well as *Metaph.* Γ.5 1009b12-15, and the criticism of Laks (1999).

beings are composed of basic elements, and since it is an accepted principle that Like Cognises Like,²⁹⁹ since soul can know all things, then soul must itself be composed of the basic elements (whatever elements there may be). This reasoning Aristotle ascribes to Diogenes of Apollonia,³⁰⁰ Heraclitus,³⁰¹ Empedocles,³⁰² Plato (in the *Timaeus*),³⁰³ certain Platonist thinkers referred to in his *On Philosophy*,³⁰⁴ and Xenocrates.³⁰⁵ However, in this chapter, my discussion will be limited to Aristotle's criticism of Empedocles, as his psychology represents for Aristotle a theory which is exclusively focused on explaining the soul's cognitive powers, and not its power to produce local motion.

In the first part of this chapter, I analyse Aristotle's depiction of Empedocles' theory of the soul in *DA* 1.2. In the second part, I analyse the scientific difficulties that Aristotle raises in *DA* 1.5 against its ability to explain the soul's power of cognition, and show how he tries to resolve these difficulties in *DA* 2.4, 2.5, and 3.8.

4.2 *Aristotle's Account of Empedocles' Psychology*

Aristotle introduces Empedocles' psychology in *DA* 1.2 as follows:

(i) Those who looked to the fact that ensouled things can know and perceive beings identify soul with the first principles [of beings]: (ii) those who posit many first principles make the soul to be the same [as those principles],³⁰⁶ while (iii) those who posit one first principle make the soul to be the same [as that principle], just as (iv) Empedocles made soul from (ἐκ) all the elements,

²⁹⁹ The origins of this aphoristic principle are to be found in Hom. *Od.* 17. 218. Cf. Guthrie (1965, 2.228ff). On the application of the principle of like to like in non-epistemic contexts, cf. Mourelatos (2006, 62-63).

³⁰⁰ *DA* 1.2, 405a21-24.

³⁰¹ *DA* 1.2, 404b25-29.

³⁰² *DA* 1.2, 404b8-15.

³⁰³ *DA* 1.2, 404b16-18.

³⁰⁴ *DA* 1.2, 404b19-27.

³⁰⁵ *DA* 1.2, 404b27-30. Cf. Ross (1961, 206).

³⁰⁶ I retain ταύτας, *pace* Hicks (1907, 221), following the punctuation of the OCT and explanation of Rodier (1900, 54).

but also made each individual element to be soul (εἶναι δὲ καὶ ἕκαστον ψυχὴν τούτων), stating that:

*By Earth we see Earth, by Water Water,
by Air bright Air, but by Fire destructive Fire,
Love by Love, and Strife by baneful Strife.*³⁰⁷

And (v) in the same manner, even Plato in the *Timaeus* makes the soul out of the elements. For (vi) [he claims] like to be known by like (γινώσκεισθαι γὰρ τῷ ὁμοίῳ τὸ ὅμοιον), but (vii) things to be from the first principles (τὰ δὲ πράγματα ἐκ τῶν ἀρχῶν εἶναι). (DA 1.2, 404b7-18)³⁰⁸

Remarkably, the fragment that is quoted here is the only proof that Aristotle offers to show that Empedocles identified the soul with the elements. To understand his justification for this claim, we must focus on the last two premises. Premise (vi) claims that Plato, like Empedocles, affirmed the principle that Like Cognises Like. We can represent this idea as equivalent to the principle that: For all *X* and for all *Y*, *X* can know *Y* iff *X* is like *Y*.³⁰⁹ Premise (vii) claims that all existing things are from the first principles (or elements).³¹⁰ This suggests that, for any item *X* that one picks out, it will be composed of (or derived from) basic ingredients (i.e. first principles) in virtue of which it is able to know any other item *Y* which is composed of the same ingredients as *X*.

³⁰⁷ DK B109 (=TEGP 158[F110]).

³⁰⁸ ὅσοι μὲν οὖν ἐπὶ τὸ κινεῖσθαι τὸ ἔμψυχον ἀπέβλεψαν, οὗτοι τὸ κινητικώτατον ὑπέλαβον τὴν ψυχὴν· ὅσοι δ' ἐπὶ τὸ γινώσκειν καὶ τὸ αἰσθάνεσθαι τῶν ὄντων, οὗτοι δὲ λέγουσι τὴν ψυχὴν τὰς ἀρχάς, οἱ μὲν πλείους ποιοῦντες, ταύτας, οἱ δὲ μίαν, ταύτην, ὥσπερ Ἐμπεδοκλῆς μὲν ἐκ τῶν στοιχείων πάντων, εἶναι δὲ καὶ ἕκαστον ψυχὴν τούτων, λέγων οὕτως,

γαίῃ μὲν γὰρ γαῖαν ὀπάπαμεν, ὕδατι δ' ὕδωρ,
αἰθέρι δ' αἰθέρα διαν, ἀτὰρ πυρὶ πῦρ ἀΐδηλον,
στοργῇ δὲ στοργήν, νεῖκος δέ τε νεΐκει λυγρῷ·

τὸν αὐτὸν δὲ τρόπον καὶ Πλάτων ἐν τῷ Τιμαίῳ τὴν ψυχὴν ἐκ τῶν στοιχείων ποιεῖ· γινώσκεισθαι γὰρ τῷ ὁμοίῳ τὸ ὅμοιον, τὰ δὲ πράγματα ἐκ τῶν ἀρχῶν εἶναι.

³⁰⁹ DA 1.2, 404b17-18.

³¹⁰ DA 1.2, 404b18. Here, Aristotle treats the elements as synonymous with first principles.

In accordance with the claims of this thesis, it seems that Aristotle wants to portray Empedocles (and the elemental soul theorists generally) as having *deduced* a definition of the soul from their theory of the elements and the Like Cognises Like principle.³¹¹ Call this the Elemental Soul Deduction:

1. For all X and all Y , X can know Y iff X is like Y . (v)
2. For all X and all Y , X is like Y iff X is or contains the same principal ingredients as Y . (iv)
3. Every being Y contains or is one or more of the basic elements, B . (vi)
4. Every soul, S , can know every being Y . (i)
5. Therefore, every S is or contains every B . (ii),(iii)

Although the likeness principle expressed in premise 1 is framed with the ambiguous Greek term ὅμοιον, which can mean *either* ‘like’ or ‘same’,³¹² such that, linguistically speaking, it is vague enough to admit of either a broad *similarity* interpretation (for example: dogs are like dogs *qua* being dogs, but dogs are also like chairs *qua* being four-legged), or a narrow *identity* interpretation (for example: dogs are *only* like dogs, because only things which are the *same* in kind are like one another), nevertheless, on any coherent reading, the Like Cognises Like principle implies that it is the *sameness* that obtains between cognisor and cognised that is doing the explanatory work here.³¹³

³¹¹ Pace Cherniss (1935, 293), who claims that the idea that Empedocles made the soul to be the elements is, ‘a deduction of Aristotle’s based merely upon this quotation’.

³¹² Cf. LSJ (1940), s.v. ὅμοιος.

³¹³ Plato nicely explicates how likeness reduces to sameness in *Rep.* 4, 435a5-8: Ἄρ’ οὖν, ἣν δ’ ἐγώ, ὃ γε ταὐτὸν ἂν τις προσείποι μείζον τε καὶ ἔλαττον, ἀνόμοιον τυγχάνει ὃν ταύτῃ ἢ ταὐτὸν προσαγορεύεται, ἢ ὅμοιον; Ὅμοιον, ἔφη.

For this reason, Aristotle represents elemental soul theorists like Empedocles as holding an identity interpretation of the Like Cognises Like principle. On this interpretation, being *identical in kind* to an item is a necessary and sufficient condition for being *like* that item.³¹⁴

However, is Aristotle justified in interpreting DK B109 in a way that commits Empedocles to saying that a cognitive subject is *identical* in elemental kind(s) with the element(s) that it knows? Answering this question is important, for otherwise, one comes away with the impression that Aristotle is hardly concerned with testing out the explanatory power of Empedocles' psychological principles. Of course, it is not a contradiction to claim that Aristotle is testing the explanatory power of his predecessors' principles and that he interpreted a particular predecessor wrongly; however, the thesis that Aristotle is testing out his predecessors' principles becomes much less convincing if one finds that his interpretations of them are often unjustified.

Kirk, Raven, and Schofield, for instance, point out that ὁπώραμεν in DK B109, taken with the instrumental dative (i.e. *by* earth, *by* water, etc.), grammatically suggests that Empedocles' cognitive subject is not identical to the elements by which it perceives: Empedocles does not claim that the individual elements perceive, but rather, that *we* perceive *by means of* these elements.³¹⁵ Grammatically, the elements can at most be claimed to be instruments of the perceptive soul.

However, we can begin to justify Aristotle's interpretation by pointing out that, although DK B109 does not say that the elements themselves perceive, philosophically, the cause of Empedoclean perception must be assigned to either (A) the whole living being with sense organs, (B) the organised nature of the sense

³¹⁴ Lloyd (1966, 434) argues that, in early Greek thought generally, '[...] the relationship of similarity tends to be assimilated to that of complete identity'.

³¹⁵ KRS (1983, 311).

organs, (C) the nature of the elements, or (D) some *non-elemental thing* within the composite.³¹⁶

However, under the assumption that Empedocles held a psychology consistent with his natural philosophy, option (D) is really a non-starter. Indeed, given that the explicit goal of the *Peri Physios* is to explain the origination of *all* beings from the four elements in combination with the forces of Love and Strife, it would be odd to ascribe to Empedocles the idea that the ultimate subject of perception is a ghostly being that floats free of his natural philosophy.

Option (B) provides a more plausible interpretation, as it rightly emphasises that, outside of DK B109, Empedocles often explains perception by appealing to the structure of the sense organs, not just their elemental composition. This is clearly evidenced, for instance, in Empedocles' account of the construction of the eye.³¹⁷

According to interpretation (B), the formula 'we perceive *X* by *X*' should be understood to carry roughly the same meaning as 'we perceive fire by eyes composed of fire'. In this sense, the fire by which we perceive fire refers to fire-within-an-organised-sense-organ, the earth by which we perceive earth refers to earth-within-an-organised-sense-organ, etc.

In further support of (B), outside of the fragments, there is a doxographical tradition purporting to represent the mechanics behind Empedocles' explanation of perception. Empedocles is reported to have held that, within the sense organs, there

³¹⁶ Kamtekar (2009), by appealing to 'representational contents' which seem to reside in a mental space distinct from Empedocles' material world, seems to promote a version of (D). She claims that we should distinguish two meanings of '*X*' in Empedocles' claim that we know an element '*X* by *X*'. She claims that the second *X* by which we know the first *X* refers to a mental representation of *X*, which is deployed in order to construct analogies which help us to understand the nature of objects that actually are composed of the element *X*. Such an interpretation is plausible, but only if Empedocles did not mean to restrict the realm of beings to things composed of the elements.

³¹⁷ DK B84 (=TEGP [F105]).

are various channels (πόροι) which are set up to receive effluences (ἀπορροαί) from external objects.³¹⁸ If those sense channels are in perfect alignment (σύμμετρος) with such effluences (for example, fire particles) – namely, by being the same shape and size as those effluences – and the channels are composed of the same elemental stuff as those effluences (for example, a fire channel), then whenever such effluences enter into a sense channel, perception naturally occurs.³¹⁹

In the case of Empedocles' theory of sight, for instance, Theophrastus tells us that, in the eye, fire and water channels alternate, the fire channels receiving fire particles by which we recognise white colour (or brightness), and the water channels receiving water particles by which we recognise black colour (or darkness).³²⁰ The proportional amounts of these two kinds of particles, distributed throughout the eye as a whole, are understood to produce the unified appearance of other mixed colours, just as the mixtures of basic paint colours produces the unified appearance of a further non-basic colour.³²¹

From this account of the sense organs, one might easily conclude that Empedocles thinks that it is the sense organ *as an organised whole*, and especially its structural features, which are essential to the explanation of our capacity for

³¹⁸ *Men.* 76c4-d5 =DK A92 (=TEGP 155).

³¹⁹ DK A86 (=TEGP 168). As Long (1966, 260), notes, these effluences appear to be tiny particles that constantly stream off of objects in a manner similar to Democritus' εἶδωλα. Cf. Ierodiakonou (2005, 23-34).

³²⁰ Theophr. *De Sens.* 7 =DK A86 (=TEGP 168). Aristotle, however, thinks that Empedocles may be committed to both an (active) emission theory of perception, and a (passive) effluence theory of perception. Cf. *Sens.* 2, 438a4-5, and Johansen (1997, 51-55).

³²¹ DK B71 (=TEGP 150[F101]); DK B23 (=TEGP 47[F24]). Cf. Ierodiakonou (2005, 33): '[...] our visual organ as a whole registers the proportion of fiery and watery particles in it and, depending on the kind of proportion, it has the impression of, for instance, a blue object.'

perception.³²² Under this interpretation, DK B109 does not imply that the *soul* is an elemental composite that perceives on the basis of Like Cognises Like, as Aristotle represents it in the Elemental Soul Deduction. Rather, this fragment is a shorthand and poetic way of saying that we use our *organised* sense organs, each of which is characterised by the predominance of some element in the sense channels, as instruments of perception.

However, since Aristotle is clearly aware of the structural claims about sense organs within Empedocles' theory of perception,³²³ why then in *DA* 1.2 does he still claim that Empedocles *identified* the soul with the elements (individually, and as a whole)?

The solution must be that, although organisation and proportion clearly play an explanatory role in the production of the perception of *blended objects* (such as colours which are mixed in a certain ratio), as interpretation (B) holds, Aristotle thought that, within Empedocles' philosophy, these features do not appear to provide an explanation of the *capacity of perception itself*. This can be seen from noting that Empedocles' claims about the organisation of the sense organs do not so much explain the capacity for sense perception, as they do *limit* the types of objects that the *already-perceptive* sense organs can receive.

The real explanatory work seems to be done, as interpretation (C) holds, by the principle that Like Cognises Like, which principle, as Aristotle rightly saw, is operative *within* the elemental channels inside the sense organs. In this respect, the structure of the sense organs only seems to explain the spatial *reception* of elemental particles by the senses, but it is the elemental sameness in kind between (1) the

³²² Cf. Long (1966, 262), who claims that, '[...] perception occurs when ἀπορροαί are received by the sense-organs *as distinct from other parts* of the body.' (Italics mine)

³²³ Cf. *GC* 1.8, 324b26-35 =DK A87 (=TEGP 169).

composition of the sense channels and (2) their corresponding effluences, which is the real explanation of *why* perception occurs once the elemental particles are received into the sense channels.

If option (C) is the ultimate philosophical reason for why Empedoclean perception occurs, then, given Aristotle's assumption that it is soul which is responsible for perception, his claim that Empedocles' makes the soul be the elements is a justified, even if imprecise, way of claiming that Empedocles' theory of perception reduces the soul, as an *explanans* of perception, to the material sense organs *qua* material, operating in accordance with the principle that Like Cognises Like.

However, what about option (A)? Is it plausible to claim that, in DK B109, Empedocles thinks that perception can be explained by appealing to the nature of the whole living being using their sense organs? This option seems to be a natural way of interpreting DK B109, and it is consonant with Empedocles' acceptance of the idea that there are (perishable) composite beings,³²⁴ – birds, fish, and humans, for instance – which he represents as real beings distinct from the elements which compose them, even if they can be 'reduced' in some fashion to their elemental composition.³²⁵

Strictly speaking, Aristotle already takes this interpretation into account, for he claims that Empedocles *both* made soul (in the singular) out of all of the elements (plural) – which would presumably be equivalent to making the composite the subject of perception – *and* that each of the elements in that soul-composition is *individually* a

³²⁴ *Metaph.* A.3, 984a8-11 =DK A28 (=TEGP 28).

³²⁵ DK B8 (=TEGP [F32]); DK B17 + Strasbourg Papyrus a(i) + a(ii) (=TEGP 41[F20]); DK B21 (=TEGP 45[F22]); DK B22 (=TEGP 46[F23]); and especially, DK B23 (=TEGP 47[F24]).

soul.³²⁶ By this logic, option (A) – at least, according to Aristotle – is the additive result of combining all the perceptive elements in option (C). Thus, to really challenge Aristotle’s interpretation of Empedocles in the Elemental Soul Deduction, one would have to argue that there is something about being a composite (for example, a human) which contributes in an explanatory way to the capacity for perception. However, such an explanation, which requires a sophisticated understanding of whole-part relations, does not seem to be available in Empedocles.³²⁷ For this reason, even if Empedocles understood the proper subject of perception to be a composite whole which ‘uses’ the sense organs or their elements as instruments of perception, he would still need to explain *why* it is that wholes, but not their parts, perceive the world.

If these arguments are cogent, then Aristotle is justified in thinking that Empedocles’ really only has two options for explaining perception within his system. He must either think that perception is a basic psychological power which all the elements possess in virtue of the principle that Like Cognises Like, which is just what the Elemental Soul Deduction claims,³²⁸ or, he must think it is a power of *one* of the elements over and above the others, which operates by virtue of some different principle. Here, Aristotle assumes that Empedocles held the former view, but as I argue below, in his final criticisms, he suggests that Empedocles should have held the latter.

³²⁶ Cf. *GC* 2.7, 334a9-15, which argues that the soul can *neither* come from *one* Empedoclean element (e.g. fire), *nor* from *all* the elements mixed together.

³²⁷ As Cherniss (1935, 399) rightly notes: ‘It is evident that the great flaw in the theory [of Empedocles] is the neglect of the problem of part and whole, when “Love” has “thoroughly mixed” the four roots, it appears that there must be minimal parts of these roots, but Empedocles did not consider this.’ In other words, Cherniss agrees here with Aristotle that while Empedocles takes for granted the unity of mixed compounds, he cannot properly explain this unity.

³²⁸ So Kahn (1960, 16): ‘As Aristotle saw, this view of Empedocles implies not so much a single “soul” as a multitude of mental units, one for each element (since each one perceives its corresponding object) and one for each part of the body (since each has its own blend or φύσις).’ Cf. Primavesi (2005).

4.3 *The Criticism of Empedocles' Psychology*

In *DA* 1.5, Aristotle turns to criticise the account of Empedocles' psychology which he gives in *DA* 1.2, and in particular, the soundness of the Elemental Soul Deduction. Aristotle writes:

(i) It remains to investigate the theory which posits that the soul is composed of the elements. (ii) While they say this in order that the soul can perceive and have knowledge of every being, there are many absurdities involved in this account. For (iii) they posit that the soul cognises like by what is like (τῷ ὁμοίῳ τὸ ὅμοιον), just as if the soul were posited as being the things [it cognises] (ὥσπερ ἂν εἰ τὴν ψυχὴν τὰ πράγματα τιθέντες). But (iv) the elements are not the only things that exist, since (v) there are a great number of things – perhaps even an infinite number of things³²⁹ – from the elements (τὰ ἐκ τούτων). (vi) Let it be granted that each of these things are from the elements, and that (vii) the soul cognises and perceives [like by like]; yet (viii) by what element will soul cognise and perceive the compound (τὸ σύνολον) itself, such as what God or man or flesh or bone is? (ix) This problem holds similarly in regard to whatever else is combined (συνθέτων). For (x) it is not the elements holding in any way whatsoever that compose things, but the elements holding in a certain ratio and combination (λόγῳ τινὶ καὶ συνθέσει), just as Empedocles says of bone:

*But then in broad-chested hollows
pleasant Gaia receiving two parts of eight
from gleaming Nestis, and four from Hephaestus,
came bones, being all white.*³³⁰

So (xi) it is not useful for the elements to be in the soul, unless the ratios and the composition will be in it as well. For (xii) each element will know its like, but (xiii) none will know bone or man, unless those things will be in it as well. But (xiv) who would puzzle over the question of whether there is a stone or man in the soul? (xv) Against which, because it is impossible, it is not necessary to say anything (*DA* 1.5, 409b23-410a11)³³¹

³²⁹ Cf. *SE* 1, 165a10-12, where Aristotle deduces that names, as well as accounts, must signify many things, since they are finite in number, while 'things are infinite in number'.

³³⁰ DK B96 (=TEGP [F69]).

³³¹ λείπεται δ' ἐπισκέψασθαι πῶς λέγεται τὸ ἐκ τῶν στοιχείων αὐτὴν εἶναι. λέγουσι μὲν γάρ, ἵν' αἰσθάνηται τε τῶν ὄντων καὶ ἕκαστον γνωρίζῃ· ἀναγκαῖον δὲ συμβαίνειν πολλὰ καὶ ἀδύνατα τῷ λόγῳ. τίθενται γὰρ γνωρίζειν τῷ ὁμοίῳ τὸ ὅμοιον, ὥσπερ ἂν εἰ τὴν ψυχὴν τὰ πράγματα τιθέντες. οὐκ ἔστι δὲ μόνα ταῦτα, πολλὰ δὲ καὶ ἕτερα, μᾶλλον δ' ἴσως ἅπειρα τὸν ἀριθμὸν τὰ ἐκ τούτων. ἐξ ὧν μὲν οὖν ἕκαστον τούτων, ἔστω γινώσκειν τὴν ψυχὴν καὶ αἰσθάνεσθαι· ἀλλὰ τὸ σύνολον τίτι γνωριεῖ ἢ αἰσθήσεται, οἷον τί θεὸς ἢ ἄνθρωπος ἢ σὰρξ ἢ ὄστον; ὁμοίως δὲ καὶ ἄλλο ὅτι οὖν τῶν

Aristotle's criticism here is unusual because he really offers two arguments concerning Empedocles' theory of perception, one negative, and one positive: (1) an epistemic argument *against* Empedocles' elemental soul theory, and (2) an epistemic argument which leaves a clue about how it could be made more workable.

In respect of (1), Aristotle argues that that no elemental theory of the soul *simpliciter* is able to explain our knowledge or perception of *composites*. However, in respect of (2), he suggests that, *if* the arithmetical *ratios* and their combinations are in the soul prior to perception (in some way or another), then perhaps knowledge of composites, on the basis of the principle that Like Cognises Like, *could* occur. I shall discuss the negative argument first.

Aristotle begins by assuming the truth of Like Cognises Like, in order to see how this interpretation fares in respect of accounting for our recognition of composite objects (e.g. fish, birds, humans), which, as we saw above, Empedocles allows into his ontology. Call this Aristotle's Knowledge of Composites Challenge:

1. Soul, *S*, can know *X* iff *S* is like *X*. (iii)(vii)
2. *S* is like *X* iff *S* is or contains one of the elements of *X*. (iii)

συνθέτων· οὐ γὰρ ὅπως οὖν ἔχοντα τὰ στοιχεῖα τούτων ἕκαστον, ἀλλὰ λόγῳ τινὶ καὶ
συνθέσει, καθάπερ φησὶ καὶ Ἐμπεδοκλῆς τὸ ὄστουν·

ἡ δὲ χθὼν ἐπίηρος ἐν εὐστέρνοις χοάνοισιν
τὼ δύο τῶν ὀκτὼ μερέων λάχε νήστιδος αἴγλης,
τέσσαρα δ' Ἡφαίστοιο· τὰ δ' ὁστέα λευκὰ γέγοντο.

οὐδὲν οὖν ὄφελος ἐνεῖναι τὰ στοιχεῖα ἐν τῇ ψυχῇ, εἰ μὴ καὶ οἱ λόγοι ἐνέσσονται καὶ ἡ
σύνθεσις· γνωριεῖ γὰρ ἕκαστον τὸ ὅμοιον, τὸ δ' ὄστουν ἢ τὸν ἄνθρωπον οὐθέν, εἰ μὴ
καὶ ταῦτ' ἐνέσται. τοῦτο δ' ὅτι ἀδύνατον, οὐθὲν δεῖ λέγειν· τίς γὰρ ἂν ἀπορήσειεν εἰ
ἔνεστιν ἐν τῇ ψυχῇ λίθος ἢ ἄνθρωπος;

3. For all X , X is either a basic element, B , or a composite object, C , containing multiple B s (iv)-(vi)
4. Soul, S , can know all C . (viii)
5. But no B in S explains why S is like C *qua* C , rather than like one or more of the B s in C . (viii)
6. Therefore, either 1 or 2 is false. [Implied]

This challenge is a serious problem for Empedoclean Psychology. Empedocles, as we have seen, seems to be committed to the idea that the elemental effluences of perceived objects must enter into elemental sense channels in order to be perceived. However, as Aristotle points out, if *every* object in the world is composed of or contains one or more of these fundamental elements, how will a cognisor or perceiver know these objects *qua* composite wholes? For example, in virtue of what will a cognisor distinguish between the particles of fire arriving in their sense organs which compose *bone*, and the particles of fire arriving in their sense organs which compose *flesh*?³³² Aristotle's suggestion is that, unless a particular element in the soul has the property of being able to see the 'whole' composition, there will be no way for an Empedoclean soul to perceive composite objects *qua* composite. Instead, it will only perceive the elements within composites, and hence, at most, be able to distinguish the amount of elemental particles arriving in the sense organs (e.g. a lot of fire particles, but a small number of earth particles), but not the nature of the composite which is the origin of these particles.

However, despite the strong formulation of this initial challenge, Aristotle's next argument, rather surprisingly, suggests that he does not think that Empedocles

³³² Cf. Beare (1906, 14): 'Thus Empedocles thinks he explains sense perception when he shows how the objects of the extra-organic world enter into the bodily organs'.

needs to be committed to this absurdity. Instead, he proposes an identity criterion for composites which is not based upon their elemental composition alone, and which is suggestive of his own view of perception. Call the argument that Aristotle advances here Empedocles' Absurd Solution:

1. Soul, *S*, can know *X* iff *S* is like in kind with *X*. (iii),(vii),(xii)
2. *S* can know all *C*. (viii)
3. But the identity of every *C* is determined by a ratio, *R*, supervening upon a material composition, *M*. (x)
4. Thus, *S* will only be like in kind with *C* if every *R* and *M* are in the soul. (xi)
5. But it is absurd to say that every *R* and *M* is in *S*. (xiii)(xiv)(xv)
6. Thus, either 1 or 3 is false. [Implied]

The most surprising feature of this 'solution' is that Aristotle never claims that it is impossible, or even unreasonable, for a *non-supervening* mathematical ratio of a material compound to be in the soul. To be sure, Aristotle thinks that Empedocles himself cannot make use of this solution, since the ratios which define his composites supervene upon, and hence are inseparable from, the basic elements going into a composition (i.e. it is the ratio of two-parts-of-water:four-parts-of-fire, not 2:4 *simpliciter*, which defines an Empedoclean compound).³³³ Even so, this leaves open the possibility that, if the ratios of composites can somehow be in the soul *apart* from the elements, and if such separable ratios are sufficient to determine the identity of

³³³ This is why Aristotle emphasises that perception will not occur unless the ratios *and* the composition are in the soul ([...]εἰ μὴ καὶ οἱ λόγοι ἐνέσσονται καὶ ἡ σύνθεσις) (DA 1.5, 409b8).

compounds, then the soul might indeed perceive composites without itself being composed of the elements.

This solution seems to clear the way to the path that will eventually lead Aristotle to affirm that the perception of composites occurs by means of the reception of their sensible forms apart from the matter which underlies them, which he also claims to occur *κατὰ τὸν λόγον*.³³⁴ Even so, Aristotle's notion of having 'forms' enter the sense organs without matter differs in two respects from the 'separated' ratio theory of perception suggested above.

First, on Aristotle's picture in Empedocles' Absurd Solution, the ratio-of-elements which is a composite object has to *already* be in the soul in order for soul to recognise this composite. Second, Aristotle's reference to Empedocles' account of the mixture of bones shows that Aristotle is limiting the meaning of Empedoclean *λόγοι* to *mathematical* ratios which supervene upon the elements.³³⁵ Aristotle, I shall argue below, does not cast the knowledge of the form of a thing as knowledge of its mathematical ratio.

Despite these differences, I shall argue below that the focus on ratios within Empedocles' Absurd Solution paves the way for Aristotle's theory that perception and cognition occur by means of the reception of sensible *forms*, which are structural and defining features in objects capable of causing representations in perceivers, and that

³³⁴ DA 2.12, 424a17-24.

³³⁵ In *Sens.* 3, 439b19-440a29, Aristotle shows that he thinks that it is at least reasonable to explain the visual perception of colours falling somewhere on the colour spectrum between black and white as resulting from either the simple colours, or their elemental bearers, being juxtaposed according to certain ratios (*λόγοι*), or, by these same simple colours being stacked on top of one another so that a new colour appears *through* the other as a medium. However, although this is indeed a mathematical style account, I take it that Aristotle thinks this account of colour will belong to a secondary science (i.e. optics), which is dependent upon a more basic psychological science. Cf. Distelzweig (2013).

these forms are similar to the mathematical ratios which, according to Empedocles, define elemental mixtures.

4.4 *The Limitations of ‘Like Cognises Like’*

Because Aristotle’s next criticism of the elemental theory of soul likely applies more properly to the Academic theories of the soul discussed in his *On Philosophy* than to Empedocles, I shall bypass it in order to discuss the one which follows it, which continues Aristotle’s discussion of Empedocles. Aristotle writes:

But (i) many difficult puzzles hold for those who say with Empedocles that we know with the bodily elements (τοῖς σωματικοῖς στοιχείοις) by being near to something which is like them (πρὸς τῷ ὁμοίῳ), as can be witnessed from what is now said; for (ii) all the parts of the bodies of animals that are simply (ἀπλῶς) of earth,³³⁶ such as bones, sinews, and hair, seem not to perceive anything, and (iii) so neither perceive their like, as indeed they ought to. But moreover, (iv) to each of the first principles there will belong more ignorance than comprehension; for (v) on the one hand each element will know one element like it, but, but (vi) many elements it will not know, namely, all the others. (vii) It follows, for Empedocles at least, that his God is the most unintelligent being, for (viii) he alone will not know one of the elements, namely, Strife, but (ix) mortals can know all the elements, for (x) each mortal thing is composed of all of them. (DA 1.4, 410a27-410b7)³³⁷

Aristotle offers two arguments against Empedocles in this passage. I shall discuss each of them in turn. Aristotle’s first argument is empirical. His claim is that

³³⁶ Aristotle’s claim about bones and hair being non-perceptive is repeated at DA 3.13, 435a25.

³³⁷ πολλὰς δ’ ἀπορίας καὶ δυσχερείας ἔχοντος τοῦ λέγειν, καθάπερ Ἐμπεδοκλῆς, ὡς τοῖς σωματικοῖς στοιχείοις ἕκαστα γνωρίζεται, καί, πρὸς, τῷ ὁμοίῳ, μαρτυρεῖ τὸ νῦν λεχθέν· ὅσα γὰρ ἐστὶν ἐν τοῖς τῶν ζώων σώμασιν ἀπλῶς γῆς, οἷον ὅστ’ αὖ νεῦρα τρίχες, οὐθενὸς αἰσθάνεσθαι δοκεῖ, ὥστ’ οὐδὲ τῶν ὁμοίων· καίτοι προσῆκεν. ἔτι δ’ ἐκάστη τῶν ἀρχῶν ἄγνοια πλείων ἢ σύνεσις ὑπάρξει· γνώσεται μὲν γὰρ ἐν ἐκάστη, πολλὰ δ’ ἀγνοήσει· πάντα γὰρ τὰλλα. συμβαίνει δ’ Ἐμπεδοκλεῖ γε καὶ ἀφρονέστατον εἶναι τὸν θεόν· μόνος γὰρ τῶν στοιχείων ἐν οὐ γνωριεῖ, τὸ νεῖκος, τὰ δὲ θνητὰ πάντα· ἐκ πάντων γὰρ ἕκαστον.

the parts of living bodies which consist of earth³³⁸ do not in fact perceive their like.

Hair, for instance, which is earthy, neither perceives hair, nor does it perceive earth.

Call this Aristotle's Perceptual Gap Argument:

1. For all *X* and for all *Y*, *X* will know *Y*, under some condition *Z*,³³⁹ if *X* is made of the same elements as *Y*. (i)
2. There are parts of the body, *Q*, such as hair, that are made of earth, *E*. (ii)
3. However, no *Q* can perceive anything. (ii)
4. Therefore, no *Q* can perceive *E*. (iii)
5. Therefore, either 1, 2, or 3 is false. [Implied]

It is, of course, premise 1 that Aristotle thinks is false, and it is not difficult to see why. Premise 3 is incontrovertible (at least, if one assumes that consciousness of what is perceived is a necessary condition of perception).³⁴⁰ Premise 2 is not worth criticising, since even if one were to challenge the elemental composition of hair, bone, etc. by asserting them to be made of an element other than earth, it would be of no help to Empedocles. Because hair is composed of *some* element, it should for that reason be able to perceive *something* like itself, or, if hair itself is not perceptive, since it is made of the elements, we should at least be able to perceive something *through* our hair, just as we perceive something through our eyes.

³³⁸ Since Aristotle has just cited Empedocles' claim that bones (ὀστέα) are produced from a ratio of earth, fire, and water (*DA* 1.5, 410a4-6), he must be appealing here to his own mixture-theory, as Empedocles' account not only cannot support bones being earth *simpliciter*, but would also have bones turning out to be more fire-like than earth-like.

³³⁹ For example, if 'being near to' or 'in contact with' obtains between *X* and *Y*.

³⁴⁰ *Pace* Cherniss (1935, 307), who argues that Empedocles could claim that hair and bones do perceive 'in a dull fashion', since an imperceptible perception is not a perception at all.

Aristotle's second argument is the charge that Empedocles' Like Cognises Like principle has the undesirable consequence that his God will have more ignorance than knowledge. Call this the Ignorant God Argument:³⁴¹

1. For all X and for all Y , X can only know Y , under some condition Z , if X is made of the same elements as Y . (i)
2. So each element, E_n , can only know, under some condition Z , an element which is the same as itself, such that E_1 can know E_1 , and E_2 will know E_2 , etc. (v)
3. So each element, E_n , cannot know elements that are not of the same kind as itself. (vi)
4. Thus, any E_n , in respect of the number of things which it can know, will have more ignorance than knowledge. (iv)³⁴²
5. God is Love, E_5 , combined with elements, E_1 - E_4 , but God is not Strife E_6 .
[Assumed]
6. Therefore, God cannot, under any condition Z , know E_6 . (viii)
7. Mortal things are combinations of all the elements, E_1 - E_6 . (x)
8. Thus, mortal things can know, under some condition Z , E_1 - E_6 . (ix)
9. Therefore, at all times, God can know fewer types of things than any mortal thing. (vii)

³⁴¹ Here I label the four roots as E_1 - E_4 , Love as E_5 , and Strife as E_6 .

³⁴² Aquinas, *De anim.* I, lec. 12, n.8, takes this to be the end of the argument. However, if this were the end of the argument, it would be unclear why it would count as an objection. Aquinas' incorrect division of the argument is likely the result of William of Moerbeke's Latin translation upon which he relied, which translates $\sigmaυμβαίνει$ as 'autem'. This Latin term is more often used by Moerbeke to translate $\epsilon\tau\iota$, which (as Aquinas realises) Aristotle normally uses to call attention to a new argument.

10. However, at all times, God can know more types of things than any mortal thing. [Assumption]

11. Therefore, 1 is false. [Implied]

Although it is not clear from the text, Aristotle's argument is in part directed against Empedocles' description of God as the divine Sphere³⁴³ produced in the age of Love when Strife has been expelled from the cosmos.³⁴⁴ Although Aristotle is correct that Empedocles' represents the Divine Sphere as a unified mixture of all the elements apart from Strife, it is not clear whether Empedocles is committed to the idea that this Sphere knows all things (or all kinds of things), or whether it is simply a common opinion that God is the sort of being to know all things (or at least, know more than mortals).³⁴⁵ In any case, Aristotle's basic problem is that, if Empedocles is right that all things perceive on the basis of the principle that Like Cognises Like, then he must also accept that his God, in principle, knows less than mortals.

4.5 *The Principle that 'Like Cognises Like' and Panpsychism*

In his third and final argument against Empedocles' Elemental Soul Deduction,³⁴⁶ Aristotle claims that this principle does not offer us a way of dividing the realm of living beings from the realm of non-living beings. He writes:

³⁴³ DK B28 (=TEGP 56[F31]); DK B31 (=TEGP 60[F35]). In *Metaph.* B.4, 1000a28, Aristotle refers to Empedocles' Sphere as the 'One' (ἓν).

³⁴⁴ DK B35 (=TEGP 51[F28]); DK B36 (=TEGP 52[F29]). Cf. *DC* 3.2, 301a14-15.

³⁴⁵ The latter is Alexander's interpretation (*apud* Philop. *In de anima*, 182.11-14). Aristotle repeats this argument at *Metaph.* B.4, 1000b3-8. Cf. *Metaph.* Λ.9, 1074b24-26, where divine νοῦς is said not to think of *all* things, but only of θειότατον and τιμιώτατον things.

³⁴⁶ I suspect that Aristotle has one further argument against Empedocles which has been misplaced by an early editor. *DA* 1.5, 411a2-7, seems to follow naturally from the Panpsychism Argument, since it argues that premise 1 of this argument is not a necessary truth, if one element is sufficient to discern itself *and* an opposite element.

And (i) generally, what is the explanation (διὰ τίν' αἰτίαν) of the fact that not all beings have soul, since (ii) all beings are either an element, or composed from one, many, or all of the elements? For (iii) necessarily, every being³⁴⁷ knows one element, or some, or all. (DA 1.5, 410b7-10)³⁴⁸

Aristotle's charge here is that, because Empedocles ascribes knowledge and perception to the elements on the basis of the unrestricted principle that Like Cognises Like, it seems that *any* combination of elements, as well as each element in isolation, will be able to perceive, and for this reason, be worthy of the description 'having a soul'. Call this Aristotle's Panpsychism Argument:

1. For all *X* and for all *Y*, *X* can know *Y* iff *X* is made of the same elements as *Y*. [Assumed]
2. Every *X* in the world is composed of one or more elements, *E*. (ii)
3. Thus, every *X* can know some *Y*. (iii)
4. If *X* can know some *Y*, then *X* has a soul, *S*. [Assumed]
5. Therefore, every *X* in the world has *S*. [1-4]
6. But it is not the case that every *X* in the world has *S*. (i)
7. Therefore, 1, 2, 4, or 6 is false. [Implied]

In one way, Aristotle's argument assumes what it means to prove. If the unrestricted Like Cognises Like principle is true, then every being *X* will have a soul just by virtue of having elemental parts in itself. Moreover, these elemental parts will

This argument does not make sense in the MSS location, the context of which exclusively concerns *single-element* theories of soul (namely, air, water, and fire).

³⁴⁷ Hicks (1907, 294) argues that the subject is πᾶν, in the sense of every being.

³⁴⁸ ὅλως τε διὰ τίν' αἰτίαν οὐχ ἅπαντα ψυχὴν ἔχει τὰ ὄντα, ἐπειδὴ πᾶν ἥτοι στοιχεῖον ἢ ἐκ στοιχείου ἐνὸς ἢ πλειόνων ἢ πάντων; ἀναγκαῖον γάρ ἐστιν ἔν τι γινώσκειν ἢ τινὰ ἢ πάντα.

also have soul, regardless of whether anyone finds this view plausible. How then can Aristotle be justified in assuming 6?

The answer can be found by turning again to the structure of Aristotle's scientific method of inquiry. As I argued in *chapter 1*, Aristotle sets up his inquiry by assuming, along with most of the predecessors, that it is a basic *explanandum* of psychology that some beings are alive, and others are not. From this methodological perspective, if Empedocles denied that there are soulless beings, then he would not be engaged in the same scientific inquiry as Aristotle.³⁴⁹

4.6 *The Results of Aristotle's Criticism of 'Like Cognises Like'*

The Panpsychism Argument completes the series of criticisms Aristotle gives against Empedocles' epistemic principle that Like Cognises Like. What is the result of these arguments? Laying aside the Ignorant God Argument, Aristotle has shown that a materialist interpretation of the likeness principle is involved in too many difficulties to justify the conclusion of the Elemental Soul Deduction, namely, that the soul is identical to the elements. In particular, Aristotle has shown that Empedocles' interpretation of the principle that Like Cognises Like can neither explain why parts of the body made of some elements (earth, for example) are non-perceptive, nor how we perceive composite objects (men, for example), since such perception seems to involve further non-elemental entities, such as ratios. Yet an overarching question remains: why is Aristotle concerned to criticise the Like Cognises Like principle at all?

The answer is that Aristotle thinks that the principle that Like Cognises Like can, given certain modifications, be saved as a first principle of psychology. This can

³⁴⁹ As Sedley (2007, 7) claims, the Presocratics would have thought that the more fundamental problem is to explain why some things seem to be *inanimate*. Cf. *DA* 1.2, 403b25-27.

first be seen from the fact that, in *DA* 2.5, Aristotle attempts to solve the problem of why not every element facilitates perception by offering a new version of Like Cognises Like. Second, as an ancilliary hylomorphic thesis, in *DA* 3.8, he directly addresses the Empedoclean problem of how we perceive compounds by positing that perception is the reception of the form of a thing – similar to Empedocles’ ratio – but *not* the reception of the elements it is composed of.

This suggests that the puzzles resulting from the criticism of Empedocles are not simply generated from the vantage point of Aristotle’s own hylomorphic psychology. Instead, it suggests that certain problems resident within Empedocles’ psychological theory – such as our ability to perceive compounds defined by ratios – formed the starting points from which Aristotle’s own psychological theory began to develop. I turn now to show how Aristotle begins to modify the Like Cognises Like principle in a way which provides evidence for this thesis.

4.7 *The Modal Modification of ‘Like Cognises Like’*

When Aristotle revisits the Like Cognises Like principle in *DA* 2.5, he begins with the assumptions that the material elements *are* a crucial explanatory factor in perception, and that some version of this principle *is* operative in perception – just not in the way Empedocles thought. He writes:

But (i) there is a puzzle concerning the explanation of the fact that the senses do not perceive themselves, namely, (ii) why the senses do not produce (ποιοῦσιν) perception without external sense objects (τῶν ἔξω), even though (iii) they have in them fire, earth, and the other elements, (iv) of which elements – either in virtue of the elements themselves or through their properties (συμβεβηκότα) – there is perception.³⁵⁰ So then (v) it is clear that

³⁵⁰ I take the Greek in 417a5 inclusively, such that perception is ‘of the elements’ *as well as other things*. Cf. *DA* 3.8, 432a3-6, when Aristotle states that everything thinkable, including states and affections, are ‘in’ the perceptible forms of extended objects.

the perceptive faculty (τὸ αἰσθητικὸν) does not exist in activity, but in capacity only (οὐκ ἔστιν ἐνεργεία, ἀλλὰ δυνάμει μόνον), and on account of this (vi) it [sc. the perceptive faculty] does not perceive [sc. the elements inside it], just as (vii) that which is flammable does not burn itself by itself apart from something that produces flame; for then (viii) it would burn itself, and would have no need for actual fire. (DA 2.5, 417a2-9)³⁵¹

Although this passage is difficult to interpret, Aristotle's puzzle seems to presuppose both Empedocles' doctrine that the sense organs (but not the perceptive faculty) are composed of the elements, and that we perceive elements in the world with our elemental sense organs according to some version of the Like Cognises Like principle. Here, Aristotle uses these assumptions to introduce a paradoxical result for an Empedoclean interpretation of the Like Cognises Like principle, which concerns the ability of the sense organs to perceive themselves. Call this the Second Perceptual Gap Argument:

1. The senses, *A*, in virtue of a sense power, *P*, are able to perceive the elements, *E*, and/or their properties, *P*. (iv)
2. *As* are composed of *Es*. (iii)
3. Thus, *As* should be able to perceive themselves. (i)
4. However, the *As* do not perceive themselves, but need something outside them to perceive. (ii)
5. Therefore, *P* does not exist in activity, but in capacity. (v)

³⁵¹ ἔχει δ' ἀπορίαν διὰ τί καὶ τῶν αἰσθήσεων αὐτῶν οὐ γίνεται αἴσθησις, καὶ διὰ τί ἄνευ τῶν ἔξω οὐ ποιοῦσιν αἴσθησιν, ἐνόντος πυρὸς καὶ γῆς καὶ τῶν ἄλλων στοιχείων, ὧν ἐστὶν ἡ αἴσθησις καθ' αὐτὰ ἢ τὰ συμβεβηκότα τούτοις. δῆλον οὖν ὅτι τὸ αἰσθητικὸν οὐκ ἔστιν ἐνεργεία, ἀλλὰ δυνάμει μόνον, διὸ οὐκ αἰσθάνεται, καθάπερ τὸ καυστὸν οὐ καίεται αὐτὸ καθ' αὐτὸ ἄνευ τοῦ καυστικοῦ· ἔκαιε γὰρ ἂν ἑαυτό, καὶ οὐθὲν ἐδείτο τοῦ ἐντελεχείᾳ πυρὸς ὄντος.

Aristotle's argument seems to presuppose that any sense organ, by being composed of the elements, will be actually 'like' itself, and hence should, in virtue of the principle that Like Cognises Like, be able to perceive itself, or a part of itself (e.g. one part of the watery eye should be able to see another part of the watery eye).

Aristotle's strategy for solving this problem is to drive a wedge between the actual state of the elements which compose the sense organs, and the power of perception in the sense organs, which is 'in capacity'. After all, Aristotle has just claimed that perception seems to be a kind of alteration (*ἀλλοίωσις τις*), and any alteration presupposes that an object can be affected only if it is *unlike* what affects it before change begins.³⁵²

For Aristotle, what this implies is that, in order to explain how the sense organs perceive, one has to assume that the senses perceive in virtue of having a property which is *unlike* any of the actual properties that an object of perception has, such as an element's being hot, cold, wet, dry, etc.³⁵³ This property, Aristotle argues, whatever it may be, must be conceived of as *modal* in nature, namely, a potential of the sense organs to be altered (or quasi-altered) by an external object unlike it. If one does not assume this, then, like Empedocles, one will be faced with the paradox that the sense organs, in virtue of being fire, water, earth, or air 'in activity', should no more perceive objects in the world than their own elemental constitution.

The Second Perceptual Gap Argument thus leads Aristotle to posit a modification of the Like Cognises Like principle. After a series of discussions about action and passion, and the various senses of potentiality, Aristotle concludes that

³⁵² DA 2.5, 416b34-417a2. Aristotle establishes this causal principle in GC 1.7, 323b29-324a5.

³⁵³ Cf. Johansen (1997, 55): 'Strictly speaking, Aristotle does not argue against the claim that the eye is composed of fire. He argues against the claim that the internal fire [of the eye] can function so as to light up an object of vision.'

before the perceptive capacity (in the sense organ) has been acted upon, it must be ‘unlike’ the perceptual object, but having been acted upon, and presumably *while* it is being acted upon, it becomes ‘like’ that object in respect of that object’s form.³⁵⁴

With this modification of the Like Cognises Like principle, Aristotle can affirm that, as long as the sense organs have *some property*, or *some degree of a property*, which is (a) different from that of external sense objects which affect them (for example, if the sense organ is warm, the sense organ could be altered by cold properties) and which (b) has the function of becoming ‘like’ the object which affects it, perception will be able to occur.

Thus, under this revised Like Cognises Like principle, *like does know like*, but only in the sense that a perceptual capacity or sense organ must be *potentially like* a sensible object *before* perceiving, and *not be actually like* that object before perceiving (as Empedocles affirmed). Call this modification of the likeness principle Aristotle’s Modal Likeness Principle. It can be formulated as follows:

Modal Likeness Principle = For all *X* that can perceive an object *Y*, and for all *Y* that can act on *X qua* perceptive, *X* perceives *Y* iff *X* is potentially like *Y*, and *Y* acts upon *X qua* perceptive such as to make *X* like *Y*.

Although it is the subject of a longstanding controversy exactly how to interpret Aristotle’s principle of perceptual assimilation, since the *X* in question which becomes like *Y* – the αἰσθητικὸν – may be understood to be either (a) a capacity of the soul, (b) a physical property in the sense organs, or (c) a capacity of the soul essentially linked

³⁵⁴ DA 2.5, 417a18-20: τὸ δ’ αἰσθητικὸν δυνάμει ἐστὶν οἷον τὸ αἰσθητὸν ἤδη ἐντελεχεία, καθάπερ εἴρηται. πάσχει μὲν οὖν οὐχ ὅμοιον ὄν, πεπονθὸς δ’ ὁμοίωται καὶ ἔστιν οἷον ἐκεῖνο.

to a physical property in the sense organs, the advance that has been made by Aristotle over Empedocles' interpretation of the Like Cognises Like principle is that, no matter how one interprets the nature of the *X* which is explanatory of perception, this *X* must have a *modal status*, such that it has a potential to be altered by external sensible objects. This means that *X* cannot be identical to any actual property that a sense organ possesses *qua* elemental, as Empedocles seems to have thought.

That this is a refinement of Empedocles' theory of perception, rather than an undermining of it,³⁵⁵ is further evidenced by the opening argument of *DA* 3.1. There, Aristotle gives an argument which, although also difficult to interpret, argues from the existence of only four elements and the elemental composition of the sense organs, and the fact that we already possess the non-distal sense of touch, to the conclusion that there can only be four other distal senses, and thus no more senses than five. This argument has struck some scholars as un-Aristotelian, precisely because it seems to bear too close a resemblance to Empedocles' theory of perception.³⁵⁶

However, if the above analysis is right, then the 'Empedoclean' argument of *DA* 3.1 is thoroughly in line with Aristotle's theory of perception. First, it coheres well with his belief that all composite beings (including the sense organs) are ultimately mixtures of the four elements.³⁵⁷ Secondly, it coheres with his explicit claims in *DA* that the elemental properties (e.g. the wetness of the tongue,³⁵⁸ and the tangible properties of hot and cold³⁵⁹), do play a role in perception, even if this role is

³⁵⁵ *Pace* Burnyeat (2002, 40 n.32)

³⁵⁶ E.g. Maudlin (1986). Cf. the response of Johansen (2013, 172-176).

³⁵⁷ Cf. *GC* 2.7-8.

³⁵⁸ *DA* 2.10, 422a17-18.

³⁵⁹ *DA* 2.11, 424a2-5.

only one of hypothetical necessity (which may or may not entail physical alteration during the process of perception).³⁶⁰

If so, it should not be surprising that Aristotle never departs from Empedocles' basic idea that the elemental properties resident in the sense organs at least play a necessary role in perception. Moreover, it suggests that Aristotle is actively investigating, through empirical and conceptual investigation, *what* elements, or what elemental or higher level capacities, are consistent with the new Modal Likeness Principle.

For instance, Aristotle claims that it is the property of *transparency* (διαφανὲς) – a property which has a *potential* to take on various colours at various times – resident in the element of water and air that is the 'elemental property' explanatory of how colours are able to be transmitted to the eye, as opposed to any *actual* properties of fire.³⁶¹ This does not mean that transparency is an *immaterial* property (it is not), but rather, that this property can function in accordance with Aristotle's Modal Likeness Principle because it is 'unlike' actual colours before it is affected, but has the capacity to be 'like' actual colours when it is in activity.

4.8 The Second Modification of 'Like Cognises Like'

However the Modal Likeness Principle alone is not enough to resolve Aristotle's problem about how we know composite objects. At most, the Modal Likeness Principle shows that the sense organs, *qua* elemental, can perceive actually 'unlike' elements or qualities that exist outside the body in virtue of their potential to be made 'like' those elements or qualities through some sort of alteration. However,

³⁶⁰ I thank David Charles for first introducing me to this idea.

³⁶¹ DA 2.7, 418b4-9.

this new principle does not explain how we perceive composite objects *qua* composite.

In his criticisms of Empedocles' psychology, Aristotle argued in Empedocles' Absurd Solution that, since the identity of composite objects (according to Empedocles) depends upon a distinct ratio-of-elements, in order for the soul to be 'like' a composite object such as a stone or a man, it would have to have an *actual* stone or man in it. However, Aristotle's Modal Likeness Principle seems to suffer this same problem. For by this new principle, perception only occurs if there is *potentially* a stone in the perceptive part of the soul or perceptual organ, which potential stone, one might think, must become an *actual* stone in the perceptive part of the soul or perceptual organ during perception. How then does Aristotle avoid making composite entities materialise in the soul or the sense organs?

I suggested earlier that Empedocles could avoid this problem *if* he had a way of affirming that the ratios determining each composite could somehow be detached from the elements which they supervene upon. In *DA* 3.8, Aristotle will opt for a similar solution.

In this chapter, having acknowledged his partial agreement with the elemental soul theorists by claiming that, if soul is to know and perceive everything, it must in a way be all existing things (ἡ ψυχὴ τὰ ὄντα πῶς ἐστὶ πάντα),³⁶² Aristotle infers that actual perception must, on this basis, be understood in one of two ways. Either the soul, or one of its parts, when actualised by a perceptible or intellectual object, literally becomes the external things it perceives, or, it becomes the *forms* of those things (ἀνάγκη δ' ἢ αὐτὰ ἢ τὰ εἶδη εἶναι).³⁶³ Since Aristotle argues that the former option is physically impossible, he concludes that the proper interpretation of the

³⁶² *DA* 3.8, 431b21.

³⁶³ *DA* 3.8, 431b28.

Modal Likeness Principle is that, when cognition of a stone occurs, for example, what comes to be in the soul is not the stone as a composite object, but the form of the stone (οὐ γὰρ ὁ λίθος ἐν τῇ ψυχῇ, ἀλλὰ τὸ εἶδος).³⁶⁴

How are we to interpret such a form? One option is to interpret a form as one of the same mathematically expressible ratios that Empedocles' refers to when describing composites such as bone,³⁶⁵ which is what Empedocles' Absurd Solution suggests. However, it is hard to see how a particular ratio (e.g. 3:4:2) in separation from earth, fire, and water, for example, would allow us to perceive bone. Instead, Aristotle seems to affirm the idea that the form of something, e.g. bone, is a dispositional property belonging to it which can produce in our soul (or one of its parts) a mental representation of a *whole stone*.

Although it is beyond the scope of this chapter to give a full account of Aristotle's account of perception, the crucial aspect of his theory in respect of the present thesis is that, by following his scientific method of inquiry in *DA* 1.4, Aristotle prepared for the idea that composites are not perceived in virtue of their *bodily particles* (such as Empedoclean effluences) entering our sense organs. Rather, composites are perceived in virtue of a formal structure which they have, which structure (or form) can act upon a perceptive or cognitive capacity of soul in order to produce in it a unified representation.³⁶⁶

This 'unity' aspect of Aristotle's solution is especially important, for his Knowledge of Composites Challenge implies that, without some kind of unifying aspect being present in composites, we could only perceive the isolated elemental

³⁶⁴ *DA* 3.8, 431b29-432a1.

³⁶⁵ Cf. Caston (2005, 313); Ward (1988); Silverman (1989).

³⁶⁶ Cf. Johansen (2013, 121), who remarks that Empedocles has no 'formal principle, which [...] defines the soul in its capacity to take on the perceptible or intelligible form.'

qualities of a composite, such as blobs of colour and sound, but never a mixed whole, such as a talking man.³⁶⁷

4.9 Conclusion

I have argued in this chapter that Aristotle follows his method of scientific inquiry in discussing Empedocles' principle that Like Cognises Like in order to test whether or not this principle, and the elemental definition of soul which he infers from it, facilitates an understanding of the soul's capacity to perceive. By showing the weakness of this principle, Aristotle is able to show that Empedocles' Elemental Soul Deduction cannot be supported, and hence, that the essence of soul cannot be defined in terms of the material elements.

However, I also argued that Aristotle uses the weaknesses which follow from the Like Cognises Like principle to justify a modification of it, which I have deemed the Modal Likeness Principle. Further, I argued that Empedocles' insight into the idea that compound objects have certain structures, or ratios, which Aristotle critiques in his Knowledge of Composites Challenge and Empedocles' Absurd Solution, help to motivate and justify Aristotle's idea that the soul must be made like the *form* of an object – seen as an unified structure present in an object which allows us to represent this object *qua* composite – rather than as a disparate collection of elemental properties.

³⁶⁷ This is, in effect, the criticism given by Theophr. (*De sensu*. 17-19), who argues that, whilst the perception of white and black could be accounted for by Empedocles' theory of vision (for instance, by the eye's reception of water and fire effluences, respectively), the perception of *non-primary colours* (for example, grey) cannot be. The argument suggests that Empedocles may not be able to give a good description of how a *unitary* perception of a non-primary colour arises out of multiple (and spatially separate) effluences coming into the sense channels.

The Principle of Non-Uniform Soul

In the confidence that their principles are true they are ready to accept any consequence which follows from them – as though some principles did not require to be judged from their consequences, and particularly their final result. And that result, which in the case of productive knowledge is the product, in the knowledge of nature is the phenomena always and properly given by perception.

–Aristotle, *De Caelo* 306a14-17

5.1 Introduction

In *chapter 2* and *chapter 3*, I argued that Aristotle tests the ability of the Platonic principle of self-motion and the principle of harmony to explain (among other things) the characteristic ability of the soul to produce local motion in animals. In *chapter 4*, I argued that Aristotle tests the ability of Empedocles' Like Cognises Like principle to explain the characteristic ability of the soul to produce cognition and perception.

In this chapter, I shall argue that Aristotle uses the explanatory requirements of his scientific method of inquiry to force a wedge between those of his predecessors' first principles which are meant to be explanatory of the soul's power to initiate motion in the body, and those which are meant to be explanatory of its power to produce perception and cognition. This wedge, I shall argue, provides a negative answer to the fourth scientific puzzle of *DA* 1.1, whether the souls of all living beings

are the same in kind or not (ὁμοειδής ἅπανα ψυχὴ ἢ οὐ).³⁶⁸ This answer, I further argue, lays the groundwork for Aristotle's claim in *DA* 2.3 that the definition of soul must be understood on analogy to the definition of 'figure'.

5.2 *Is the Soul Uniform?*

In *DA* 1.1, Aristotle claims that his inquiry into the soul will need to answer whether or not every soul is uniform (ὁμοειδής). This question, as with many others in *De Anima*, has its source in Plato's dialogues.³⁶⁹ A version of this question is first put forward in Plato's *Phaedrus*, where Socrates claims that, in considering the nature of anything, we must first discover whether it is 'simple or multiform' (ἀπλοῦν ἢ πολυειδές), and then consider, in respect of its form(s), what power it has, and in respect of what things this power can act or be acted upon.³⁷⁰ Someone who wishes to speak accurately about soul, claims Socrates, needs to say whether soul is 'one and all alike' (ἐν καὶ ὅμοιον) by nature, or multiform (πολυειδές) like parts of the body.³⁷¹

³⁶⁸ *DA* 1.1, 402b1-2. Johansen (2012, 48) helpfully describes this puzzle as being about the way individual souls are 'externally related' to one another. The fifth scientific puzzle, at *DA* 1.1, 402b3, being whether soul – if *not* ὁμοειδής – differs in species or in genus, I take to be a question about the correct classification of νοῦς. This question, although intimately connected to the fourth puzzle, is not answered in *DA* 1 (although *DA* 1.1, 408b18-19 does indicate Aristotle's answer in nascent form). In this latter question, Aristotle could mean by 'genus' either *highest* genus, i.e. the categories of being (as he uses it at *DA* 1.1, 402a3), or, fundamentally different kinds of things which are referred to homonymously. Aristotle cannot, however, have the former meaning in mind, as this would merely repeat the first puzzle about which highest genus or category the soul should be placed in (for example, substance, quantity, quality, etc.). It is difficult to see, however, how souls could differ in genus. A partial solution may be found in *Metaph* I.10, 1058b36-1059a10, where Aristotle claims that what is perishable (τό φθαρτόν) and what is imperishable (τό ἀφθαρτόν) cannot be contained under the same genus. In *DA* 2.3, 413b24-27, Aristotle will claim that intellect seems to be a separate *genus* of soul, precisely for the reason that it seems to be ἀφθαρτόν. If so, I take it that Aristotle's query amounts to asking whether all soul is (im)mortal or not.

³⁶⁹ Despite the fact that the term ὁμοειδής – usually translated as 'homogenous' or 'same in kind' – is foreign to Plato's works, as is the related term, ὁμοιοειδής.

³⁷⁰ *Phaedr.* 270d1-7

³⁷¹ *Phaedr.* 271a4-8.

A second, and perhaps more important precedent for Aristotle's question, is Plato's question of whether or not the soul is *μονοειδής*, which can mean 'one in kind' or 'uniform'.³⁷² This question is first raised by Plato in the *Phaedo*, where it is argued that the soul is by nature *like* the Forms – each of which is *μονοειδής* – but that soul (in some undefined way) can't be fully *μονοειδής* because of its association with the pleasures and pains of the body.³⁷³

Similarly, having offered in *Rep.* 4 the theory that soul contains at least three different parts (the appetitive, the spirited, and the rational),³⁷⁴ in *Rep.* 10, Plato expresses doubt about this analysis. He suggests that the soul might *not* be multiform (*πολυειδής*) in itself after all,³⁷⁵ but perhaps is only like the sea-god Glaucus, whose true nature is obscured by the shells and seaweeds and stones which have attached themselves to his body.³⁷⁶ Once freed of such bodily accretions, Plato suggests, soul might stand out as something pure and simple.

Plato's theory across both of these works suggests that he favours the view that soul is essentially *μονοειδής*, and that it only appears or becomes *πολυειδής* in virtue of its association with the body.³⁷⁷ This thesis, unlike the doctrine of the *Timaeus*, suggests that the soul is not essentially divisible into soul kinds, and that its

³⁷² The most important difference between the two terms is that, whereas Aristotle's use of *ὁμοειδής* suggests a qualitative form distributed 'horizontally' across a multitude of different particulars, Plato's use of *μονοειδής* usually suggests a form which exists over and above a multitude of particulars which 'vertically' partake of it (for example: *Phaed.* 78d5; 80b2; *Symp.* 211e4). Cf. *Tim.* 59b2, where it means 'unique in kind'.

³⁷³ *Phaed.* 83d4-e3.

³⁷⁴ Cf. *Rep.* 4, 435b9-c6.

³⁷⁵ Cf. *PA* 2.10, 656a1, where Aristotle claims that the soul-principle in plants is not *πολυειδής*.

³⁷⁶ *Rep.* 10, 611a10-612a6. I take it, however, that it would be logically possible for there to be three kinds of soul without there being any one soul which has all these kinds within it, as, for example, there can be three kinds of animal, e.g. dog, cat, and horse, without there being any particular animal that is all three of these. However, Plato does not in the *Republic* consider this to be a live option.

³⁷⁷ Cf. Shields (2010).

involvements with the body (e.g. its desire for bodily pleasure) will be seen as accidental concomitants to its being embodied. Such a soul – if it could exist apart from the body, as Plato sometimes argues – would have a single definition or account no matter where it may be found in nature.

5.3 *The First Missing Capacity Argument*

Aristotle, on the other hand, when he comes to give his own preliminary answer to the similar question of whether the soul is ὁμοειδής, will argue that the soul is divisible into different kinds *per se*.³⁷⁸ If so, this implies that different kinds of soul will not have the same definition (even if they have overlapping definitional components, such as ‘form’).

Aristotle begins to argue for this thesis by pointing out an explanatory problem which is common to all the predecessor theories of soul, namely, that the characteristic attributes of soul that their first principles are meant to be explanatory of are absent in many kinds of living beings. Aristotle argues for this claim as follows:

But (i) all of them – both those who claim that the soul is composed of elements because it is able to perceive beings, and those who claim that soul is the thing most able to initiate motion – do not account for every soul. For (ii) not all animals that perceive (τὰ αἰσθανόμενα) are animals that move (κινητικά); for (iii) there appear to be certain animals that are stationary in respect of place; and yet it seems that, (iv) among the varieties of motion, it is in respect of local motion alone that the soul moves the animal (κινεῖν ἢ ψυχὴ τὸ ζῶον) [...] (DA 1.5, 410b16-21)³⁷⁹

³⁷⁸ That this puzzle is solved in DA 1.5 is strongly evidenced by the fact that the term ὁμοειδής does not occur after DA 1.5.

³⁷⁹ πάντες δὲ καὶ οἱ διὰ τὸ γνωρίζειν καὶ αἰσθάνεσθαι τὰ ὄντα τὴν ψυχὴν ἐκ τῶν στοιχείων λέγοντες αὐτήν, καὶ οἱ τὸ κινητικώτατον, οὐ περὶ πάσης λέγουσι ψυχῆς. οὔτε γὰρ τὰ αἰσθανόμενα πάντα κινητικά (φαίνεται γὰρ εἶναι τινα μόνιμα τῶν ζῶων κατὰ τόπον· καίτοι δοκεῖ γε ταύτην μόνην τῶν κινήσεων κινεῖν ἢ ψυχὴ τὸ ζῶον).

Call this general argument the First Missing Capacities Argument. It can be formulated as follows:

1. All soul, *S*, produces in all animals, *A*, a capacity for local motion, *L*, and perception, *P*. (i)
2. In some *A* there is a capacity for *P* but not *L*. (ii)-(iii)
3. So 1 is false. [1, 2]
4. Thus, no first principle of *S* which makes the production of *L* and *P* essential to every *S* is correct. (i)

Aristotle's evidence for premise 2 is empirical: he appeals to the existence of certain animals, such as sea-urchins, which seem to be able to perceive, but are incapable of initiating their own local motion.³⁸⁰ Aristotle's argument here is that, if the predecessors were collectively right to identify the soul's characteristic attributes as motion and perception, then they will need to explain why, sometimes, one of these psychological attributes is missing in animals.

It might be objected that it is unfair for Aristotle to lump the predecessors' theories together here, since any given predecessor could bite the bullet and claim that soul need not be responsible for *both* motion and perception. However, in general, this solution would misunderstand the structure of Aristotle's scientific method of inquiry. Unless there is reason to doubt one of the initial phenomena granted to belong to the soul by nature, for instance, its ability to produce either local motion or perception, it will be a requirement of *any* scientific definition of soul – including a predecessor definition – that it be able to demonstrate these attributes in an explanatory way.

³⁸⁰ Cf. *HA* 1.1, 486a13-14; *PA* 4.5, 681b34; *PA* 4.7, 683b4-11; *GA* 715a9-11. Cf. *Metaph.* 1024a11-20.

Certainly, it may be possible to reject any of the initial *explananda* of inquiry. One might believe, for example, that souls produce local motion, but not perception. In this case, one would count sea-urchins as inanimate, despite the fact that they perceive. Similarly, one might believe that soul does not cause local motion in animals, but accept that it causes perception. In this case, one would count plants as inanimate.

However, in lieu of reasons to reject these initial phenomena associated with soul, the First Missing Capacities Argument shows that, no matter which one of the predecessors' two general frameworks for explaining soul one chooses – a motive framework, or a cognitive framework – one will inevitably be unable to account for one or the other of the soul's attributes that have been collected by Aristotle's scientific inquiry.³⁸¹

5.4 The Second Missing Capacity Argument

Aristotle's next argument is similarly empirical, but he directs it specifically towards the elemental soul theorists, who, on the basis of the principle that Like Cognises Like, argued that living beings composed of the elements will have cognitive capacities for recognising like elements.

However, in this second argument, a move is made which signals that Aristotle's inquiry into the essence of the soul is beginning to expand even further beyond the initial attributes and affections that he and his predecessors associated with the soul. We already saw in the criticism of the harmony theory that Aristotle was beginning to expand the initial set of psychological *explananda* by adding to it (a) psychological works and affections (presumably, those discussed in *DA* 1.1), (b)

³⁸¹ Cf. *DA* 1.1, 402b3-5, where Aristotle claims that even his contemporaries, i.e. those who are now (*vũv*) accounting for (*λέγοντες*) and investigating (*ζητοῦντες*) soul, seem to investigate only human soul.

intellect, (c) the desiring power, and (d) the soul's relation to the body and the functioning of the latter's parts.³⁸²

Here, Aristotle introduces a further *explanandum* that he believes to belong to the soul by nature, but which the predecessors did not unanimously affirm: (d) an unnamed capacity of plants by which they live (which will later be identified as the nutritive soul). He writes:

But (i) it is similar for those who compose intellect (νοῦν) and the perceptive capacity (αἰσθητικὸν) from the elements. For (ii) it appears that plants live (ζῆν) although they do not share in locomotion or³⁸³ perception, and (iii) many animals do not possess reason (διάνοιαν). (DA 1.5, 410b21-24)³⁸⁴

Call this argument the Second Missing Capacities Argument. It can be formulated as follows:

1. Assume that the capacity for reasoning, *R*, and the capacity for perception, *P*, belong to all living beings composed from the elements, *B*. (i)
2. Plants and animals are *B*. (ii)
3. So, all plants and animals should possess *R* and *P*. [1, 2]
4. But no plant possesses either *R* or *P*, and some animals do not possess *R*. (ii)
5. Hence 1 is false. [1-4]

³⁸² DA 1.4, 408a4-13.

³⁸³ Torstrik (1863, 130) excises φορᾶς οὐδ', finding the lack of a locomotive power in plants to be extraneous to the argument. However, if Aristotle's focus is shifting towards the inability of his predecessors' first principles to account for all forms of *life*, which the predecessors have implicitly limited to the ability to move locally or perceive, then we can accept the text as it stands and see Aristotle as building upon the First Missing Capacities Argument.

³⁸⁴ ὁμοίως δὲ καὶ ὅσοι τὸν νοῦν καὶ τὸ αἰσθητικὸν ἐκ τῶν στοιχείων ποιοῦσιν. φαίνεται γὰρ τὰ τε φυτὰ ζῆν οὐ μετέχοντα [φορᾶς οὐδ'] αἰσθήσεως, καὶ τῶν ζώων <τὰ> πολλὰ διάνοιαν οὐκ ἔχειν.

6. Thus, no elemental principle of the soul which makes *R* and *P* essential to *B* can account for every soul. (i)

In this argument we have an indication that Aristotle thinks that his predecessors, by focusing only on the phenomena of local motion and perception, overlooked another psychological phenomenon, namely, life in plants. Here, for the second time, Aristotle appeals to the phenomenon that plants seem to be animate,³⁸⁵ although they possess neither locomotive nor perceptive abilities. Now, however, Aristotle argues that this phenomenon needs to be explained by psychology. However, since Aristotle has yet to identify precisely what this capacity for life is (e.g. is it growth, or nutrition, or both?), no more should be read into the Second Missing Capacities Argument than that the predecessors' cognitive principles do not offer an adequate explanation of every form of life.

5.5 *The Third Missing Capacity Argument*

Aristotle's next argument initially seems to supplement these points about soul kinds, but it confusingly suggests that the First Missing Capacities Argument and the Second Missing Capacities Argument might be able to be conceded by someone who still thought that all soul had an intellectual and a perceptive part.³⁸⁶ Of this theorist, Aristotle writes:

³⁸⁵ The first time plants come up for discussion is in the criticisms of Xenocrates at *DA* 1.4, 409a9.

³⁸⁶ Ross's (1967, 208) interpretation of the argument cannot be correct without further explanation. For if one takes the subject of *παραχωρήσειε* to be someone who would 'admit the truth of the criticism expressed in ll.21-26 [read ll.21-24],' such a person could not, without further reasons, go on to posit that intellect and the perceptive faculty are parts of *every* soul, since the truth of the empirical criticisms expressed in 410b21-24 consists in showing that intellect and the perceptive power are *not* parts of every soul. For this reason, Hicks (1907, 295) suggests that *ταῦτα* in 410b24 could point forward to the claim that mind and the perceptive capacity are parts of soul.

But (i) if someone were to concede these cases (παραχωρήσειε) and were to posit that intellect (τὸν νοῦν)³⁸⁷ is some part (μέρος τι) of soul, and similarly the perceptive capacity (αἰσθητικόν), (ii) neither in this way would they account universally (καθόλου) for every (πάσης) soul, nor (iii) for the whole of any one soul (περὶ ὅλης οὐδεμιᾶς). (DA 1.5, 410b24-27)³⁸⁸

Since Aristotle does not specify *why* the theorist who would posit that intellect and the perceptive power are parts of all soul does not correctly explain the whole of soul, or even any individual soul, his reasoning must be reconstructed somewhat tentatively. Call this argument the Third Missing Capacities Argument:

1. Assume that every soul has only two parts: a perceptive part, *P*, and an intellectual part, *I*. (i)
2. However, there seems to be other soul parts in nature, *O*, besides *P* and *I*, such as the soul of plants.³⁸⁹ (ii)
3. Further, even the whole of one sort of soul, such as human soul, either does not always have *P* and *I*, and may have *O*. (iii)
4. Therefore 1 is false. [Implied]

Whilst this reading of παραχωρήσειε is possible, it is more natural to read ταῦτα as referring backwards, and to read παραχωρήσειε as suggesting that another theorist, *on different grounds* from the elemental soul theorists, might not be troubled by Aristotle's criticisms, because such arguments are not sufficient to refute a non-elemental view of intellect and the perceptive power.

³⁸⁷ Even if νοῦς is synonymous with 'God', as Menn (1992) argues, for Aristotle's argument to make any sense, he must be thinking of νοῦς as manifesting itself as an intellectual state within the souls of individual living beings. For this reason, I have opted to translate νοῦς as 'intellect'.

³⁸⁸ εἰ δέ τις καὶ ταῦτα παραχωρήσειε καὶ θεῖν τὸν νοῦν μέρος τι τῆς ψυχῆς, ὁμοίως δὲ καὶ τὸ αἰσθητικόν, οὐδ' ἂν οὕτω λέγοιεν καθόλου περὶ πάσης ψυχῆς οὐδὲ περὶ ὅλης οὐδεμιᾶς.

³⁸⁹ The nutritive capacity (τὸ θρεπτικόν) may not be the only capacity Aristotle is thinking of here. Exactly how many parts (in the sense of essential capacities) of the soul there are is an issue that Aristotle returns to a number of times, for example, at DA 3.2, 432a22-b7. Cf. *chapter 6*.

I have formulated Aristotle's argument here as generally as possible, since it is unclear whether or not Aristotle means to restrict his criticism to the fact that the theorist in the Third Missing Capacities Argument has left the nutritive power *alone* unaccounted for, which is how some commentators take it,³⁹⁰ or whether this theorist might also have left the motive power of soul unaccounted for.³⁹¹ This criticism is so unusual that it is unlikely that Aristotle does not have a real opponent in mind.

Although the commentators suggest various answers as to whom it might be, *prima facie*, whoever it is would need to be a theorist who (a) did *not* hold an elemental theory of mind and the perceptive power, since these thinkers in particular are the exclusive target of the Second Missing Capacities Argument, (b) could be described as making intellect and the perceptive power into *parts* of soul which are somehow *distinct* from one another, and (c) who, by Aristotle's lights, can neither account for all, nor even a single (perhaps) paradigmatic case of animal soul.

On all these grounds, the only philosopher who seems to fit the bill is Anaxagoras. This Presocratic is weakly criticised in an earlier argument which not only matches all of these criteria, but also structurally and semantically parallels the Third Missing Capacities Argument. In *DA* 1.2, after claiming that Democritus identifies intellect and the perceptive power of the soul,³⁹² Aristotle goes on to distinguish this identity view of soul and intellect from the more ambiguous view of Anaxagoras. He writes:

³⁹⁰ For example, Hicks (1907, 295), and Ross (1965). However, in terms of the argument, while Aristotle has mentioned that plants live, he apparently does not feel confident enough to assert that plants have a principle of life different from a perceptual principle, or that everything with perception also has this principle of life, until *DA* 1.5, 411b27-30. Even here, the soul-principle in plants is left unspecified.

³⁹¹ However, this is not necessarily the case if Aristotle has Anaxagoras in mind here, since his 'intellect' seems to serve as both a cognitive and motive principle.

³⁹² *DA* 1.2, 404a27-31.

But Anaxagoras is less clear concerning them [sc. soul and intellect]. For in many places he says that the cause (αἴτιον) of beauty and order is intellect (νοῦν), but in other places he says it to be soul; it [sc. intellect] belongs, he says, to all (ἅπασιν) living beings, both great and small, noble and ignoble (μεγάλοις καὶ μικροῖς, καὶ τιμίος καὶ ἀτιμοτέροις).³⁹³ However, what is said to be ‘intellect’ in the sense of practical intelligence (φρόνησιν) doesn’t appear to belong to all animals, or even to all humans. (DA 1.2, 404b1-6)³⁹⁴

Here we find (a) a philosopher who did not hold an elemental theory of intellect and the perceptive capacity, (b) who made a distinction between soul and intellect which could plausibly be described as a theory which makes intellect and the perceptive power into ‘parts’ of every soul, given that animals have ‘intellect’ or ‘soul’ in the sense of having perception, while humans have ‘intellect’ or ‘soul’ in the sense of practical intelligence,³⁹⁵ and (c) who is criticised for not being able to account either for *all* animal soul, or for a paradigmatic subclass of animals with ‘intellect’, namely, humans.

Anaxagoras not only makes a good textual fit for the Third Missing Capacities Argument, but he would also have a *prima facie* reason to concede the validity of the Second Missing Capacities Argument. According to Aristotle, the reason why the elemental soul theorists are committed to the idea that all plants and animals have similar cognitive capacities is because they are committed to the principle that Like Cognises Like. Thus, if something is made up of elements, as all plants and animals are, by this likeness principle, such beings must have cognitive capacities.

³⁹³ It appears that Aristotle is here paraphrasing DK B12.14-15 (=TEGP 31[F15]): καὶ ὅσα γε ψυχὴν ἔχει καὶ τὰ μείζω καὶ τὰ ἐλάσσω, πάντων νοῦς κρατεῖ.

³⁹⁴ Ἀναξαγόρας δ’ ἥττον διασαφεῖ περὶ αὐτῶν· πολλαχοῦ μὲν γὰρ τὸ αἴτιον τοῦ καλῶς καὶ ὀρθῶς τὸν νοῦν λέγει, ἐτέρωθι δὲ τὸν νοῦν εἶναι ταῦτόν τῃ ψυχῇ· ἐν ἅπασιν γὰρ ὑπάρχειν αὐτὸν τοῖς ζώοις, καὶ μεγάλοις καὶ μικροῖς, καὶ τιμίους καὶ ἀτιμοτέροις· οὐ φαίνεται δ’ ὅ γε κατὰ φρόνησιν λεγόμενος νοῦς πᾶσιν ὁμοίως ὑπάρχειν τοῖς ζώοις, ἀλλ’ οὐδὲ τοῖς ἀνθρώποις πᾶσιν.

³⁹⁵ DA 1.2, 404b3-6.

However, someone like Anaxagoras, who did not base their theory of cognition on the principle that Like Cognises Like, could take this argument as valid but specious.³⁹⁶ The elements which compose living beings, he could claim, do not play an essential role in perception or cognition. Rather, these capacities are determined by a thing's possession of soul, or intellect, and these can be present in living beings, including plants, in *degrees*. If so, then Anaxagoras is free to hold that plants, for example, *do* have a lower level form of perception or intellect (for instance, turning towards the rays of the sun), and that this capacity cannot be deduced from their elemental constitution and the principle that Like Cognises Like.³⁹⁷

However, if Anaxagoras is the target here, as seems to be the case, then in line with most commentators, Aristotle's objection in the Third Missing Capacities Argument is likely based on the tacit claim that Anaxagoras has not provided a first principle which is explanatory of the *nutritive* phenomena associated with soul which is found in all plants and animals.

5.6 *The Solution to the Puzzle of the Soul's Uniformity*

Taken together, these three arguments provide a preliminary answer to the fourth scientific puzzle of *DA* 1.1. This puzzle, as we have seen, asks whether or not soul is uniform no matter where it is found in nature. In all three of the above arguments, we see that Aristotle's answer to this question is a resounding 'no'.

Up to this point, Aristotle has argued that the predecessors used their first principles of the soul in order to explain certain phenomena that the soul is

³⁹⁶ As Burnyeat (2002, 37) points out, in *DA* 1.2, 405b 14-15, Anaxagoras is the only epistemologist who is said not to have a theory of knowledge based upon the likeness principle.

³⁹⁷ Indeed, according to a report about Aristotle's lost work *On Plants*, DK A117 (=TEGP 59), Anaxagoras believed that plants do desire, perceive, and feel pleasure and pain.

responsible for in living beings, and in particular, their capacities for local motion and perception. As Aristotle represents them, the tacit assumption in all the predecessor accounts is that, once the correct first principle of soul and its powers is established, anything which has a soul will have all and only those powers which can be deduced from this single first principle.

However, the First Missing Capacities Argument, the Second Missing Capacities Argument, and the Third Missing Capacities Argument have each shown that the powers of soul are *not* distributed uniformly in nature. There now seem to be two possibilities left in respect of giving an explanatory first principle of the soul. Either one must accept that ‘soul’ is a homonymous term used to designate different (unknown) principles – one which causes motion, one which causes perception, and another which causes life in plants,³⁹⁸ or, one must accept each of these capacities as a genuine psychological phenomenon, and discover a first principle which explains why they are distributed non-uniformly across different kinds of living beings. Such a principle might, for example, entail that there are several parts of soul, and that such parts only appear together in certain beings.

In fact, these problems are reflected in the fifth and sixth scientific puzzles of *DA* 1.1, which concern whether or not a single account (λόγος) can be given of all soul, or whether different accounts must be given for different kinds of soul, either at the level of genus (for example, between plants, animals, and gods) or at the level of species (for example, between horse and dog). Aristotle’s missing capacity arguments show that, because his predecessors’ first principles are unable to explain the variety of phenomena associated with soul uncovered by Aristotle’s zoological researches,

³⁹⁸ A similar worry is expressed by Johansen (2012, 48): ‘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.’

these definitional problems will need to be addressed during the course of his psychological inquiry.³⁹⁹

5.7 *The Orphic Theory of Soul*

After showing in the three missing capacities arguments that no predecessor theory which makes soul the principle of only intellectual, perceptive, or motive capacities is able to account correctly for the souls of all living things, Aristotle goes on to argue that the theory of soul propounded in the Orphic verses suffers this same problem, but for a different reason. He writes:

(i) This problem [sc. of not accounting for the souls of all living beings] also befalls the account in the verses called ‘Orphic’. For (ii) he says that the soul is breathed in (ἀναπνεόντων) and enters in from the ‘whole’ (τοῦ ὅλου), being carried by the winds. But (iii) this cannot occur for plants and even some animals, if not all of them breathe. But (iv) this remained unnoticed by those who supposed this view. (DA 1.5, 410b27-411a2)⁴⁰⁰

Call this criticism Aristotle’s Respiration Refutation. We can represent it in the following way:

1. Every living being, *L*, has soul, *S*, in virtue of breathing in external air. (ii)
2. Plants, *P*, and animals, *A*, are *L*. [Assumed]
3. No *P*, and not all *A*,⁴⁰¹ can breathe. (iii)
4. But all *P* and all *A* have *S*. [Assumed].

³⁹⁹ For this reason, I take it that all the missing capacity arguments tend to favour Johansen’s (2012, 58) claim that: ‘[...] 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.’

⁴⁰⁰ καὶ ὁ ἐν τοῖς Ὀρφικοῖς καλούμενοις ἔπεσι λόγος· φησὶ γὰρ τὴν ψυχὴν ἐκ τοῦ ὅλου εἰσιέναι ἀναπνεόντων, φερομένην ὑπὸ τῶν ἀνέμων, οὐχ οἶόν τε δὲ τοῖς φυτοῖς τοῦτο συμβαίνειν οὐδὲ τῶν ζώων ἐνίοις, εἴπερ μὴ πάντα ἀναπνέουσιν· τοῦτο δὲ λέληθε τοὺς οὕτως ὑπειληφότας.

⁴⁰¹ Fish, for example. Cf. DA 2.8, 421a3-6; Resp. 480b12-20.

5. Therefore, not all *S* comes into *L* through breathing. (iv)

Despite being aimed at the Orphic verses, this Respiration Refutation may reflect Aristotle's view of other respiration-based psychologies that were reviewed earlier. Within the group of theorists covered in *DA* 1.2, among those who hold some sort of respiratory view of the soul are to be classed the Pythagoreans, who claimed that the soul could be identified with the motes (ξύσματα) in the air (or something in the air that moves the motes),⁴⁰² Democritus, who held that soul consists of spherical atoms that were breathed in through external air, and the theory of Diogenes of Apollonia.⁴⁰³

For this reason alone, the Orphic theory criticised in the Respiration Refutation need not be viewed as Aristotle's sole target. Another likely purpose of this argument is to emphasise that, because respiratory theories of the soul (such as those propounded by the Pythagoreans and Democritus) *generally* do not account for the origination of soul in all living beings, Aristotle thinks that they can be relegated to the non-scientific status of the Orphic verses, in the same way that predecessor

⁴⁰² *DA* 1.2, 404a17-19.

⁴⁰³ *DA* 1.2, 404a9-16. Diogenes of Apollonia, whose air theory of soul was reviewed in *DA* 1.2, 405a21-25, would also be vulnerable to this objection. The fragments of his work suggest that he defends a theory of the soul's all-pervasiveness through an appeal to the process of respiration. In *DK* B4 (=TEGP 7[F4]), for instance, he asserts that: 'Men and other animals live in virtue of air through breathing (ἀναπνέοντα). And this is to them life (ψυχή) and thinking (νόησις) [...].' Apropos to Aristotle's criticisms, Diogenes also seems to posit air as an explanatory cause of the growth of plants. Cf. *DK* B2 (=TEGP 4[F2]). However, in *DK* A19, it is also reported that Diogenes held that, since plants cannot breathe, they cannot have intelligence. One might also add Homer to the list of respiratory theorists, since in *Il.* 5.694-668 he describes how the soul (ψυχή) of wounded Sarpedon left him as Pelagon removed the spear from this thigh, but revived (ἐμπνύνθη) once the breath (πνοή) of the north wind blowing round him, gathered back the spirit (θυμόν) he had breathed out (κεκαφηότα) during his suffering.

theories which do not adequately explain why the soul is in the body can all generally be relegated to the non-scientific status of Pythagorean transmigration myths.⁴⁰⁴

Whether or not the Respiration Refutation is a poor argument depends in part upon whether or not the respiration theorists in question took the perceptible phenomenon of ‘breathing’ to be essential to their explanation of becoming ensouled.⁴⁰⁵ A respiration theorist might, for instance, think that some things, such as plants, don’t take in air through breathing, but rather ‘absorb’ soul-filled air.

While nothing precludes this possibility, Aristotle’s argument can be defended by noting that, in the case of most of the respiration theorists covered in *DA* 1.2, it is clear that the perceptible phenomenon of breathing *is* essential to their explanation of how soul enters (and stays within) the body. Democritus’ explanation of respiration, for instance, which essentially involves a certain balancing of internal and external air pressure,⁴⁰⁶ has no perceptible analogue in plants. An explanation of how creatures which live under water absorb air would have been perhaps even more difficult for an ancient scientist to construct.

In any case, by the Respiration Refutation, Aristotle means to show that no respiratory theory of soul, just like no elemental theory of soul, and no motive theory of soul, seems to offer a first principle or definition of soul which leads to a knowledge of the characteristic attributes of soul possessed by all the kinds of soul in nature. However, as I argued in *chapter 1*, being able to provide this knowledge, or at least a likely guess at it, is what Aristotle requires of any scientific first principle of soul.

⁴⁰⁴ Pace Ross (1967, 208). Cf. *DA* 1.3, 407b13-26.

⁴⁰⁵ I thank Lindsay Judson for this criticism.

⁴⁰⁶ Cf. *DA* 1.2, 404a9-16.

5.8 Soul as an Independent Element in a Mixture

In what follows, Aristotle seems to link the Orphic respiration theory of soul to yet another group of theorists who considered soul to have been ‘mixed into’ all the elements of the cosmos.⁴⁰⁷ Similar to the Orphic theory of soul, this theory is unusual insofar as it offers (a) no explicit definition or first principle of soul, and (b) no explicit theory as to which capacities – whether cognitive or motive – primarily characterise soul. Instead, these thinkers all seem to have offered only a theory of the origin of *life*. Aristotle’s discussion of this unusual mixture theory begins as follows:

And (i) so then⁴⁰⁸ some others claim soul to have been mixed (μεμῖχθαι) throughout the whole cosmos (τῷ ὅλῳ),⁴⁰⁹ from whence perhaps Thales supposed all things to be ‘full of gods’ (πάντα πλήρη θεῶν εἶναι).⁴¹⁰ But (ii) this doctrine holds certain puzzles; (iii) by what cause does the soul which is in air, or in fire, not make an animal, but only the soul in the mixtures [sc. of those elements] (μικτοῖς), (iv) even though the elements going into the mixtures seem to be better (βελτίων)? (v) (One might also investigate the

⁴⁰⁷ I here pass over 411a2-7. Following Bywater (1888, 52-54), I take it that this text interrupts the argument and is out of place. However, while I agree with Bywater that it is not an interpolation, I do not agree that this is because 411a2-7 takes up and completes the point of 410b22, as he does. The point of 410b22 is decidedly not epistemological – it concerns the empirical distribution of intellectual and perceptive soul to different animals, not the elemental constitution by which they can cognise objects in the world. Instead, I suspect these lines should be placed either (a) near the end of the criticisms of Empedocles, at 410b10 after πάντα, as a secondary conclusion of Aristotle’s *Panpsychism Argument* (see *chapter 4*, sect. 5), or, (b) at the end of Aristotle’s criticism of those who thought it might be possible to make the soul out of all (ἐξ ἀπάντων) the categories of being at 410a15-16, where it would serve as a riposte to the idea that soul needs to be made out of *all* the elements of being ([...] οὐθὲν δεῖ ἐξ ἀπάντων). Cf. Hicks (1907, 297).

⁴⁰⁸ I here accept Bywater’s restoration of δὴ for δέ, on the assumption that Aristotle’s discussion is meant to follow on from his discussion of the Orphic verses.

⁴⁰⁹ The reference here must be to the universe as a whole. Cf. *DC* 1.9, 278b18-21.

⁴¹⁰ Interestingly, Aristotle himself affirms something like this doctrine in *GA* 3.11, 762-18-27, where he claims that, since there is πνεῦμα present throughout the universe, τρόπον τινὰ πάντα ψυχῆς εἶναι πλήρη, undoubtedly a play on Thales’ famous remark. This claim partially commits Aristotle to the view that is expressed here, except for the fact that the soul present in πνεῦμα is only *potentially* (nutritive) soul. For an analysis of this difficult section of *GA* 3.11, and Aristotle’s theory of the spontaneous generation of animals from πνεῦμα distributed throughout the whole, cf. Lennox (1982) and Gotthelf (1989).

reason why the soul in the air is better and more eternal (ἀθανατωτέρα) than the soul in animals.)⁴¹¹ (vi) Both ways of answering [sc. the former question] are either absurd (ἄτοπον) or unreasonable (παράλογον). For (v) to say that fire or air is an animal (ζῷον) is very unreasonable, but (vi) not to say that they [sc. fire or air] are animals when they have soul in them is absurd. (DA 1.5, 411a7-16)⁴¹²

While Aristotle nowhere identifies the group of theorists he is responding to here,⁴¹³ as with the case with Anaxagoras in the Third Missing Capacities Argument, there are some clues which suggest his target.

First, Aristotle's use of mixture terms suggests that the theory on offer may be helpfully understood in terms of Aristotle's own theory of mixture. Aristotle's theory of mixture entails that if something is an ingredient in a mixture, it must (a) exist prior to that mixture and (b) be a separate body capable of coming into physical contact

⁴¹¹ This side puzzle assumes that the holders of the mixture theory believed that there could be greater and lesser degrees of soul purity and life-span depending on which element the soul resided in. In the extreme case, it seems, if the soul resided in a pure airy element, it would be immortal.

⁴¹² καὶ ἐν τῷ ὅλῳ δὴ τινες αὐτὴν μεμῖχθαι φασιν, ὅθεν ἴσως καὶ Θαλῆς ᾤθη πάντα πλήρη θεῶν εἶναι. τοῦτο δ' ἔχει τινὰς ἀπορίας· διὰ τίνα γὰρ αἰτίαν ἐν μὲν τῷ ἀέρι ἢ τῷ πυρὶ οὐσα ἢ ψυχὴ οὐ ποιεῖ ζῷον, ἐν δὲ τοῖς μικτοῖς, καὶ ταῦτα βελτίων ἐν τούτοις εἶναι δοκοῦσα; (ἐπιζητήσειε δ' ἂν τις καὶ διὰ τίνα αἰτίαν ἢ ἐν τῷ ἀέρι ψυχὴ τῆς ἐν τοῖς ζώοις βελτίων ἐστὶ καὶ ἀθανατωτέρα.) συμβαίνει δ' ἀμφοτέρως ἄτοπον καὶ παράλογον· καὶ γὰρ τὸ λέγειν ζῷον τὸ πῦρ ἢ τὸν ἀέρα τῶν παραλογωτέρων ἐστὶ, καὶ τὸ μὴ λέγειν ζῷα ψυχῆς ἐνούσης ἄτοπον.

⁴¹³ Thales, whom Ross (1967, 209) takes as the passage's primary target, seems only to be an example of the sort of person who held a mixture view, not its primary representative. Whilst the *Timaeus* is also sometimes suggested as Aristotle's target, there, whilst soul itself is the *product* of a mixture or blending (of divided and undivided Sameness, Difference, and Being), it is never said to be *mixed* throughout the whole universe, but rather 'woven' (διαπλακεῖσα) (*Tim.* 36e) or 'stretched' (ἔτεινεν) (*Tim.* 34b) through it. Hicks (1907, 297) notes the theory's similarity to an argument that Plato gives in *Phileb.* 29a9-30a8. There, Plato argues that, just as all the elements (fire, air, earth, and water) which compose particular bodies are derived from, and have the same essential properties as, the elements of the universe, so also particular animate bodies must have derived their soul from that of the universal body. However, I thank Thomas Johansen for pointing out to me that Plato does not commit himself to the logic that Aristotle ascribes to the mixture theorists, as soul is applied by Plato not to the individual elements that compose living bodies, but to each animate body taken *as a whole*.

with whatever it is mixed with.⁴¹⁴ If so, then Aristotle's target is likely a theorist who held that soul is in some way (a) independent of the four elements, but (b) itself a type of corporeal or elemental body. As I suggested above, since the mixture theory seems textually and philosophically connected to the Orphic theory of the soul, this also suggests that the mixture theory has (c) a connection to the respiratory theory of soul.

Taking (a), (b), and (c) together, Aristotle's target is likely a theory which held that soul is a kind of elemental stuff mixed into all the elements, but especially the air breathed in by animals. This suggests something like the views of Anaximenes, Diogenes of Apollonia, Heraclitus, or the Pythagoreans.

However, these theories are not equivalent to one another. Broadly speaking, one group seems to *identify* soul (at least to some degree) with the air that an animal breathes in (Diogenes and Anaximenes), while the other group seems to claim that soul is *not identical* to breathed air, but is primarily located *within* that air (the Pythagoreans and Democritus). Below, I shall argue that the textual evidence suggest that Aristotle has the latter, but not the former theorists in mind.

In his first argument, Aristotle suggests that this mixture theory of soul entails a difficulty about the meaning of 'animal'. Call this argument the Pure Element Dilemma:

1. Soul, *S*, is mixed throughout the whole cosmos, *W*. (*i*)
2. *W* is composed of the pure elements, *P*, and their mixtures, *M*. [Assumed]
3. Thus, *S* will be mixed into *P* and *M*. [1, 2]
4. Anything that has *S* in it is a living being, *L*. (*iii*)
5. Thus, any *P* or any *M* is an *L*. [1-4]

⁴¹⁴ GC 1.10, 327b20-21.

6. But to assert 5 is unreasonable, for only some *Ms* are living beings. (iii),(v)
7. But to deny 5 is absurd. (vi)

In the Pure Element Dilemma, Aristotle alleges that if all it takes to make an animal is to have soul, and soul has been mixed throughout every part of the cosmos (as the theorists in question think), then they will be committed to the idea that every element and mixture is an animal. Here, Aristotle portrays the mixture theorists as believing soul to be a type of elemental stuff, which stuff can be mixed into other things to produce a mixture which takes on certain soul qualities (just as salt is a thing that can be mixed into water so as to make it taste salty). Who, however, could it be who held such mixture theory?

There are two pieces of evidence that point to the Pythagoreans, and probably Democritus as well. The first piece of evidence is that the only parallel in *De Anima* to Aristotle's description of the soul being 'in' an element, such as 'in air' (ἐν τῷ ἀέρι), or 'in fire' (ἐν τῷ πυρί), occurs in his description of the respiratory theories of the Pythagoreans and Democritus.

Aristotle claims that the former group of thinkers held the soul to be the motes in the air (τὰ ἐν τῷ ἀέρι ζύσματα), or whatever in the air moved these motes,⁴¹⁵ and he claims the latter to have held the soul to be fire-atoms or warmth, which warmth or fire-atoms Aristotle *also* suggests can be identified with the motes in the air.⁴¹⁶ Both of these positions are compatible with, and may even imply, the idea that particles of soul are mixed throughout the whole of nature, and that, despite this (perhaps because of their small size), soul particles still reside primarily in mixtures of pure air or fire.

⁴¹⁵ *DA* 1.2, 404a18.

⁴¹⁶ *DA* 1.2, 403b31-404a4.

Whoever these theorists are, Aristotle does not seem to present the Pure Element Dilemma as a merely dialectical point about the linguistic use of the term ζῷον. Aristotle's objection is not that the term ζῷον cannot be applied to the elements; rather, it is that if we accepted the mixture theory view, we would be forced to deny the initial *explananda* of Aristotle's inquiry, namely, the attributes marking out the difference between ensouled and unensouled things.⁴¹⁷ Conversely, since it is analytic that ζῷα are things with souls, *sans* further justification, to deny that the elements, if they have soul mixed into them, are ζῷα, would be like claiming that not all unmarried men are bachelors.

5.9 *Parts of the Universe vs. Parts of the Soul*

Having given a preliminary refutation of the mixture theory, Aristotle turns to give a critical explanation of how the mixture theorists came to believe the soul to be mixed throughout the elements in the universe. This explanation points to a difficulty in asserting the soul to have a uniform whole-part structure like one of the four elements. Aristotle writes:

But (i) they seem to have supposed the soul to be in those things [*sc.* the elements] because (ὅτι) (ii) they held that any elemental whole (τὸ ὅλον) is uniform (ὁμοειδές) with its portions (μορίοις);⁴¹⁸ (iii) Hence it is necessary for

⁴¹⁷ DA 1.2, 403b25-27.

⁴¹⁸ The belief that Aristotle here assigns to the predecessors in (ii) is vague. Modern English translations of this sentence (for instance, Hicks, Smith, and Barnes) imply that Aristotle is assigning to the mixture theorists a prior belief in an unrestricted mereological doctrine, namely, that 'any whole must be uniform with its parts'. However, following the ancient commentators, I take it that this unrestricted belief *cannot* be what Aristotle means to assign to the mixture theorists, as Aristotle makes the belief that soul is uniform depend upon the truth of the conditional claim in (iii) about how animals become ensouled, *not* on the truth of the doctrine that *any* whole is uniform with its parts. If the mixture theorists believed that *any* whole was uniform with its parts (which is obviously false), it would immediately follow that soul was uniform with its parts regardless of whether or not a life-producing element was enclosed in animals. If the reasoning Aristotle assigns to the predecessors is valid, as

them to claim that soul is uniform with its portions as well, if it is by some portion of what surrounds (τοῦ περιέχοντος)⁴¹⁹ being cut off and enclosed (ἀπολαμβάνεσθαι) inside the animals that they become living beings. But (iv) if air that is split up is uniform (ὁμοειδής), but the soul consists of unlike parts (ἀνομοιομερής),⁴²⁰ then it is clear that some soul will belong to the air, but some [part of] soul will not belong. (v) So it is necessary for soul either to consist of like parts (ὁμοιομερῇ), or to not be in any random portion whatsoever of the whole (τοῦ παντός). (DA 1.5, 411a16-23)⁴²¹

Aristotle's argument is difficult to interpret on both logical and textual grounds.⁴²² The first difficulty is that it is unclear why, if soul is mixed throughout *all* the elements, as the mixture theorists are reported to have held, Aristotle seems to focus specifically on air.

The second difficulty is that the structure of Aristotle's argument is unclear. It is not apparent whether Aristotle is criticising the mixture theorists for *falsely believing* that soul is uniform throughout the cosmos, or merely showing that a false

Aristotle's frequent use of ἀναγκαῖον surely suggests, τὸ ὅλον must refer to one or each of the primary elements, a use mirrored at *Phys.* 3.5, 205b20-22. Further support for this reading can be gathered by noting that, when Aristotle uses the term ὁμοειδής to discuss the relation of a whole to its parts, it is generally (and maybe even always) in respect to elemental masses. Cf. *Metaph.* Δ.25, 1023b17-19; *Metaph.* Δ.3, 1014a30-31: [...] ἀλλὰ κἂν διαιρῇται [sc. στοιχεῖον] τὰ μόρια ὁμοειδῆ, οἷον ὕδατος τὸ μόριον ὕδωρ, ἀλλ' οὐ τῆς συλλαβῆς. Importantly, Aristotle takes the thesis that any *elemental* whole is uniform with its parts to be *true*, while he takes the principle that every whole in general is the *same* (ταυτόν) as the sum of its parts to be *false* (cf. *Top.* 6.13, 150a15-16).

⁴¹⁹ Whilst this term need not refer to air (cf. *Metaph.* Δ.26, 1023b27-28), this is the most likely meaning here, given (a) its proximity to the Orphic view of the soul, and that (b) the only time Aristotle uses this term in *DA* 1 is *DA* 1.2, 404a10, where he is criticising a respiratory theory of soul. Cf. *DA.* 2.7, 418b22.

⁴²⁰ Typically, this term refers to the parts of the body which are distinct from one another. Cf. *HA* 523a31ff; *PA* 640a23-24; 640b20-21; 647b21ff.

⁴²¹ ὑπολαβεῖν δ' εἰκότα εἶναι τὴν ψυχὴν ἐν τοῦτοις ὅτι τὸ ὅλον τοῖς μορίοις ὁμοειδές· ὥστ' ἀναγκαῖον αὐτοῖς λέγειν καὶ τὴν ψυχὴν ὁμοειδῆ τοῖς μορίοις εἶναι, εἰ τῷ ἀπολαμβάνεσθαι τι τοῦ περιέχοντος ἐν τοῖς ζώοις ἐμψυχα τὰ ζῶα γίνεται. εἰ δ' ὁ μὲν ἀπὸρ διασπώμενος ὁμοειδής, ἡ δὲ ψυχὴ ἀνομοιομερής, τὸ μὲν τι αὐτῆς ὑπάρξει δῆλον ὅτι, τὸ δ' οὐχ ὑπάρξει. ἀναγκαῖον οὖν αὐτὴν ἢ ὁμοιομερῇ εἶναι ἢ μὴ ἐνυπάρχειν ἐν ὅτῳ οὖν μορίῳ τοῦ παντός.

⁴²² The difficulty of the passage is pointed out by Themist. (*Paraphrasis in de anima* 36.20-21), who, after providing his own sophisticated exegesis, feels compelled to brag that 'Those who came before us failed to gain a mastery over this text, as anyone who wishes to can easily confirm.'

belief in a uniform soul is entailed by their *true belief* that the elements are homogenous, in combination with their false belief that it is by cutting off a piece of a surrounding element (e.g. air) that a thing becomes ensouled.⁴²³

The first difficulty can be resolved by noting that a mixture theory of soul leaves open how thoroughly something can mix with something else. Soul may, for instance, be mixed into the whole cosmos, but have mixed better with air or fire, such that these elements, post-mixture, can manifest more of the soul's powers than soul mixed in with earth, for example. This is why Aristotle might take the theory to concern air more than the other elements.

This idea is also consistent with Aristotle's description of an animal cutting off a portion of its surrounding (περιέχοντος), a term which, in *DA* 1.2, seems to be used exclusively of surrounding air. This seems to indicate that the mixture theorists held that a piece of a 'finer' element (for example, a portion of air) can become enclosed in another 'thicker' element (for example, earth), perhaps in the way Aristotle thinks that πνεῦμα can be cut off and enclosed in something (ἐμπεριληφθῆ) so as to produce life spontaneously.⁴²⁴ On this picture, a mixture theorist could hold that whilst all the elements may have a portion of soul, there could be elements in which soul stuff is more plentiful.

The second difficulty is harder to resolve. Historically, two different interpretations of Aristotle's final criticism of the mixture theorists have been offered.⁴²⁵ The first reading, offered by Themistius and adopted by Aquinas, has Aristotle arguing that the mixture theory is internally contradictory in respect of its claims about the airy soul of animals, and its claims about the surrounding (or cosmic)

⁴²³ As Philop. (*In de anima* 190.8-10) recognises.

⁴²⁴ Cf. *GA* 3.11, 762a18-27.

⁴²⁵ I ignore the reading of Simplicius, who unreasonably takes the passage to be affirming that all the elements *are* ensouled.

air. The second reading, offered by Philoponus, has Aristotle arguing that the mixture theory is explanatorily inadequate to account for the ‘parts’ of souls in plants, animals, and humans, in a way similar to the three missing capacity arguments discussed above.

Themistius’ reading, call it the Mixture Dilemma, sees Aristotle as arguing:

1. The whole of each element, *E*, is uniform with its portions, *P*. (ii)
2. Some *P* of *E* which is cut off in animals, such as air, *A*, contains soul, *S*.
(iii)
3. Hence, every *P* of *A* contains *S*. [1-2]
4. The same argument can be made for the other *E*s [Assumed in (i)].
5. But *S* in *A* outside animals is better and more immortal than *S* in *A* within animals. [411a11-13]
6. Thus, one *P* of *S*, the immortal part, will belong to the surrounding *A*, but another *P* of *S*, the mortal part, will not. (iv)
7. If 6, then the whole of *A* is not uniform with every *P* of *A*. (iv)
8. But 7 contradicts 1. [1, 7]
9. Thus, one must either accept 1-4, and reject 5, or, accept 5 and reject 1-4.
(v)

This Mixture Dilemma reading is attractive for two reasons. First, it makes Aristotle’s question about soul in the air being better and more immortal than the soul in animals in 411a11-13 not merely a parenthetical puzzle which is left dangling, but a crucial part of the internal consistency of the mixture view being discussed. Second, it explains why Aristotle would claim in (iv) that it is clear that some part of the soul

will exist in air even if the soul is *not* uniform – a thesis which Aristotle does not accept. This claim makes more sense if Aristotle, in accordance with his method of scientific inquiry, is attempting to show that, if the first principle of the soul is a uniform elemental stuff, then it cannot explain why this soul stuff would be better and more immortal in the elements existing outside of animals (a phenomenon apparently granted by the mixture theorists, but not by Aristotle).

The other interpretation, which I take to be the right one, is represented by Philoponus.⁴²⁶ He sees Aristotle as building upon his previous missing capacity arguments by showing that, because every elemental whole is uniform with its portions (a view Aristotle accepts as true), a mixture theorist who holds that soul-stuff is uniform and mixed into every element must deny the apparent phenomenon that there is more than one kind of soul in nature. Call this the Non-Uniform Soul Argument:

1. Each element, *E*, is uniform with its portions, *P*. (ii)
2. Some *P* of *E* which is cut off in animals, such as air, *A*, contains soul, *S*.
(iii)
3. Hence, every *P* of *A* contains *S*. [1, 2]
4. But *S* has unlike *Ps* in different animals. (iv)

⁴²⁶ Philop. *In de anima* 190.14-191.10, goes one step further to prove the impossibility of the mixture view. He argues that: if they (a) reject the soul's uniformity in the air, and accept that *different* kinds of soul are in *spatially different* portions of the air, then they must reject their belief that every form of soul is omnipresent in the air. But if (b) they accept that *all kinds of soul* are present in *every* part of air (for example, that nutritive, perceptive, and rational soul are found in every part of air), then they will still be unable to explain why every (breathing) animal, each cutting off a uniform portion of air for itself which contains every capacity of soul, does not have the same soul powers.

5. If *S* has unlike *Ps* in different animals, then the *P* of *A* cut off in animals will not be uniform with the whole of *A*. (iv)
6. But 5 contradicts 1. [5, 1]
7. Hence, either 4 is false and 1 is true, or 1 is false and 4 is true. (v)

The essential difference between this argument and the Mixture Dilemma is that this argument takes the conditional claim that soul is *ἀνομοιομερής*, reflected in premise 4, to be referring to Aristotle's empirical observations that there are different soul capacities distributed differently amongst animals, and not to the belief that the soul is better and more immortal in air or fire. The main benefit of this interpretation is that it makes better sense of Aristotle's claim in (iii) that it was necessary *for the mixture theorists* to hold that the soul is uniform, despite the fact that Aristotle has shown that it is not by means of his missing capacities arguments.

5.10 *Aristotle's Problem with the Mixture Theory*

In the Non-Uniform Soul Argument, then, Aristotle shows that there is a fundamental mereological difference between elemental wholes, whose portions manifest the *same* powers as their wholes, and psychological wholes, whose 'portions' manifest categorically *different* powers in different living beings.

A mixture theorist can of course hold that different living beings manifest the same psychological powers to different degrees, depending upon how much soul-stuff they have within their mixture. However, what they cannot do is explain fundamental differences in capacities amongst living beings. Since the mixture theorists Aristotle has in mind are committed to the uniformity of soul, they must also accept that no living being completely lacks any psychological power. Under this theory, plants, for instance, must be affirmed as having a capacity for local motion, even if they do not

contain enough soul-stuff to manifest this power. It is not clear what Aristotle would make of such an explanation. Presumably, his only argument would be to claim that nature does nothing in vain, and it would seem vain for nature to give plants and animals powers which they could never exercise.⁴²⁷

Regardless, Aristotle thinks that these arguments are enough to show that soul, because it differs in different kinds of living beings, is not uniform, thus solving the fourth scientific puzzle of *DA* 1.1. His assertion of the soul's lack of uniformity naturally leads to the questions which are the subject of the next chapter, such as whether individual souls which belong to a single species (e.g. human souls) are uniform, or whether they have different 'parts'.

5.11 *How to Define a Non-Uniform Soul*

Taken together, Aristotle's arguments suggest that the idea of soul as a single, homogenous entity or stuff, spread throughout nature, is not consistent or explanatory of the basic phenomena initially associated with soul, namely, motion and perception. Nor is it explanatory of two other phenomena introduced by Aristotle, namely, life in plants, and intellect in humans. Instead, given that Aristotle has argued that there are a variety of kinds of soul in nature, some of which are capable of existing apart from one another, a different approach to the soul's first principles seems to be required.

It is this observation, it seems, which ultimately leads Aristotle to adopt the counter-intuitive theses, introduced in *DA* 2.3, that there is no single kind of entity called 'soul' in nature, and that the common definition of 'soul' must be understood as analogous to the definition of 'figure'. Aristotle writes:

⁴²⁷ Cf. *DA* 3.9, 432b21-6. Cf. *Alex. De Anima* 27.9.

So it is clear that there will be one definition (λόγος) of soul in the same sense as there is one definition of ‘figure’ (σχήματος). For there is no figure apart from triangle and the figures which succeed it, nor is there ‘soul’ apart from the ones spoken of [namely, nutritive, perceptive, and cognitive soul]. But a common account might be given even in the case of figures, which would harmonise (ἐφαρμόσει) with all of them, but be peculiar (ἴδιος) to none. And similarly, this would apply to the souls (ψυχαῖς) spoken of. (*DA* 2.3, 414b20-25)⁴²⁸

This result, it seems, is constrained by Aristotle’s proof in *DA* 1.5 that none of the predecessors who provided a common explanatory definition or first principle of soul were able to account for the different kinds of soul phenomena that exist in nature. If the soul had turned out to be a uniform entity or stuff, a single common definition would have been possible. However, Aristotle’s missing capacity arguments, along with his critique of respiratory theories of the soul, have shown this to be an illusion.

This does not mean, however, that the Hylomorphic Definition of Soul as the ‘first fulfilment of a natural instrumental body’ that Aristotle proposes in *DA* 2.1 is empty.⁴²⁹ Rather, what it means is that the psychologist will, in each individual kind of living thing, need to determine what bodily instruments and capacities the soul is a fulfilment *of* relative to each living thing. Aristotle’s hylomorphic first principle of soul, in this sense, can be seen as plastic in a way that none of the predecessors’ principles are, because it can serve to fulfil the capacity for motion, and the capacity for perception, as well as any other bodily capacity that a living being might have.

5.12 Conclusion

In this chapter, I have argued that Aristotle provides a negative answer to the fourth scientific puzzle of *DA* 1.1 about whether soul is uniform or not, a puzzle

⁴²⁸ δῆλον οὖν ὅτι τὸν αὐτὸν τρόπον εἰς ἂν εἴη λόγος ψυχῆς τε καὶ σχήματος· οὔτε γὰρ ἐκεῖ σχῆμα παρὰ τὸ τρίγωνον ἔστι καὶ τὰ ἐφεξῆς, οὔτ’ ἐνταῦθα ψυχὴ παρὰ τὰς εἰρημένους. Γένοιτο δ’ ἂν καὶ ἐπὶ τῶν σχημάτων λόγος κοινός, ὃς ἐφαρμόσει μὲν πᾶσιν, ἴδιος δ’ οὐδενὸς ἔσται σχήματος. ὁμοίως δὲ καὶ ἐπὶ ταῖς εἰρημέναις ψυχαῖς.

⁴²⁹ Cf. the *Introduction to the study*.

which has its background in Plato. In the First Missing Capacities Argument, the Second Missing Capacities Argument, and the Third Missing Capacities Argument, Aristotle shows that none of his predecessors' first principles, taken singly or in combination, are able to explain all the non-uniform psychological phenomena that appear in nature.

I have further argued that Aristotle's discussion of the Orphic theory of the soul in the Respiration Refutation, and his discussion of the mixture theory of soul in the Non-Uniform Soul Argument, gives further evidence for his claim that soul is not uniform, by showing that even origin theories of the soul which do not attempt to explain directly the soul's motive or intellectual capacities, are still incapable of explaining the origination of various kinds of soul within living beings.

I also suggested that these arguments prepare the ground for Aristotle's difficulty in the fifth and sixth scientific puzzles of *DA* 1.1, which concern whether or not a single definitional first principle will be able to account for all forms of soul.

Finally, I claimed that Aristotle's arguments about the non-uniform nature of the soul help to show why the Hylomorphic Definition of Soul is not sufficient on its own to explain the phenomena associated with soul. The reason for this is that this definition is too general to explain the particular kinds of capacities that different living beings manifest in nature, and hence, the souls of individual kinds of living beings, once determined as formal substances, must be further specified, just as the kinds of figures must be.

The Principle of Spatial Divisibility: The Parts of Soul and Body

He combined the two kinds of being – the one which is indivisible and never changing, and the other which comes to be divisible around bodies – into an intermediate, third kind of being...

—Plato, *Timaeus* 35a1-4

6.1 Introduction

In *chapter 5*, I argued that in *DA* 1.5, 410b16-411a26, by following his scientific method of inquiry, Aristotle is able to show that his predecessors' first principles of soul are unable to explain why different kinds of living beings possess different soul powers. These arguments, I claimed, serve to provide an answer to the *fourth* scientific puzzle of *DA* 1.1, whether the soul is uniform or not.

In this chapter, I shall argue that in *DA* 1.5, 411a26-b30, Aristotle follows his scientific method of inquiry in testing out the Academic thesis that the soul performs different activities in the body with different spatial-parts of itself. I shall argue that, in so doing, he answers the *third* scientific puzzle of *DA* 1.1, 402b1, which is whether or not individual souls are able to be divided up spatially (μεριστὴ ἢ ἀμερής) or not.

I conclude that Aristotle's preliminary answer to this puzzle is a qualified one, namely, that individual souls (a) are *per accidens* spatially divisible into further whole souls, but (b) *not* spatially divisible into distinct capacity-parts, even though (c) individual souls *have* distinct capacity-parts. The results of Aristotle's analysis indicate that the nature of the soul's parts cannot be explained by the principle that they are spatially confined to certain places in the body.

6.2 *Spatial-parts vs. Capacity-parts*

Near the end of *DA* 1.5, Aristotle turns to consider a series of theses about the soul's parts. The considerations he offers, I shall argue, seem to provide a preliminary answer to his question in *DA* 1.1. about whether the soul is μεριστή ἢ ἀμερής. Whilst many commentators⁴³⁰ have supposed that this question can be treated as equivalent to the seventh puzzle of whether the soul has 'parts' (μόρια),⁴³¹ in the sense of essential capacities, I shall argue below that this view is mistaken,⁴³² and that these puzzles are logically distinct.⁴³³

The source of the confusion is that Aristotle often uses the terms μέρος and μόριον interchangeably, whether he is referring to the parts of an animal,⁴³⁴ the parts of the soul,⁴³⁵ or the parts of a genus or species.⁴³⁶ Further, because both μεριστή and

⁴³⁰ For example, Hicks (1907); Bastit (1996).

⁴³¹ *DA* 1.1, 402b9-10.

⁴³² This interpretation dates back to Alexander's lost commentary (*apud* Philop. *In de anima* 35.9-11). However, in his own *De Anima* (30.26-31.5), Alexander is at pains to point out that, just because he claims the soul to have parts (μέρη), it does not follow that the soul is extended. He gives numbers as an example of things that are μεριστή and composed of parts but not extended. However, he is then forced to qualify this claim by stating that soul is also not μεριστή as numbers are, because the soul is not *composed* out of parts (συγκείμενος ἐκ μερῶν).

⁴³³ Cf. Johansen's (2012, 47-48) view that the third puzzle concerns the soul's 'internal divisibility'. He also takes this question as related to, but distinct from, the puzzles about the taxonomic classification of the soul's μόρια, which occurs at *DA* 1.1, 402b9. In contrast, Bastit (1996, 14) takes both questions taxonomically when he claims that, « En effect, si l'âme ne se divise pas, toutes les âmes seront de meme espèce [...] ». Whilst this would be a neat solution, it would mean that the immediately following phrase – καὶ πότερον ὁμοειδὴς ἅπασα ψυχὴ ἢ οὐ – would have to be understood epeexegetically. As I show below, however, although these puzzles are related, Aristotle treats them as distinct. In respect of the taxonomic classification of the soul's parts, I agree that Aristotle thinks that strong (i.e. possessing no definitional overlap) and symmetric separability *in account*, in the sense defined by Johansen (2012, 53-72) and Corcilius and Gregoric (2010), is held by Aristotle to be a necessary condition for a *capacity* of the soul (which are many) to count as a *part* (μόριον) of soul (which are few). Cf. Whiting (2002). Here, however, I only defend the claim that the third puzzle concerns the spatial divisibility of the soul, not its divisibility in account.

⁴³⁴ *DA* 1.1, 412b1; *PA* 1.1, 640a35.

⁴³⁵ For example, *DA* 3.10, 433bl, and *PA* 1.1, 641a17-27.

ἀμερής are etymologically related to μέρος, and the latter term is used by Aristotle synonymously with μόριον,⁴³⁷ it is easy to infer that Aristotle’s puzzle about the soul’s divisibility or indivisibility is ambiguous as to what types of parts the soul might be divisible into.

However, this grammatical inference is mistaken. Throughout the Aristotelian *corpus*, the adjectives μεριστός and ἀμερής are used by Aristotle (with one possible exception)⁴³⁸ to describe something which is divisible or indivisible *in quantity*, whether this is a spatial quantity,⁴³⁹ a temporal quantity, or a numerical quantity.⁴⁴⁰ In fact, in the *Physics*, Aristotle defines being ἀμερής – which is the contrary of being μεριστός – as being unable to be divided in respect of quantity.⁴⁴¹

Since Aristotle does not appear to be worried in *DA* 1.1 about whether or not the soul is a motion which has distinct temporal parts, and because he treats even Xenocrates’ thesis that soul is a self-moving number as a spatial thesis,⁴⁴² when he puzzles about whether soul is μεριστή or ἀμερής, he must be asking whether or not it can be spatially divided into distinct parts. For my purposes here, I shall refer to any such part as a *spatial-part*. In contrast, whenever Aristotle uses a ‘part’ term to refer

⁴³⁶ *Metaph.* Δ.25, 1023b18-25.

⁴³⁷ Cf. *Metaph.* Δ.25. Cf. Bonitz (1955, 454 s.v. μερίζειν) and (1955, 454 s.v. μέρος).

⁴³⁸ At *APo* 2.19, 100b2, Aristotle uses τὰ ἀμερῆ to refer to universals. But as Ross (1949, 678) points out, elsewhere, Aristotle uses τὰ ἄτομα. If one were to speculate, one might think that Aristotle’s technical vocabulary here was still Platonic.

⁴³⁹ For example, *DA* 1.3, 407a19. Being ἀμερής is explicitly contrasted with having magnitude at *Metaph.* Λ.7, 1073a6-7, *Phys.* 8.10, 266a10, and *Phys.* 8.10, 267b25-26.

⁴⁴⁰ For example, *DA* 1.4, 409a2.

⁴⁴¹ *Phys.* 6.10, 240b12-13: ἀμερὲς δὲ λέγω τὸ κατὰ ποσὸν ἀδιαίρετον. The list of meanings in Bonitz (1955, 38 s.v. ἀμερής) confirms that Aristotle has no other use for this term other than the exception mentioned. This term is thus more specific than ἀδιαίρετον, which can be used to cover quantitative division or division into species (cf. *DC* 3.1, 299a17-24).

⁴⁴² Cf. *DA* 1.4, 408b32-409a30.

to a capacity or power without any spatial implication,⁴⁴³ I shall call such a part a *capacity-part*.⁴⁴⁴

Understanding the conceptual difference between capacity-parts and spatial-parts is crucial for understanding Aristotle's inquiry into the divisibility of soul and its relationship to the body in *DA* 1.5 and elsewhere; for if it is a first principle of psychology that the soul is something *μεριστή*, such that it has spatial-parts, it still might *not* have distinct *μόρια*, or capacity-parts. Similarly, if it is a first principle of psychology that the soul has distinct capacity-parts, it still might *not* be *μεριστή* into spatial-parts. Soul could, for example, be spatially *ἄμερής*, and yet still have capacity-parts, or be *spatially* *μεριστή*, and yet have only *one* essential capacity, hence be a *whole soul* with *no* proper *μόρια*.⁴⁴⁵

6.3 A Platonic Problem about Soul-Parts

That Aristotle does hold that the question of whether the soul has spatial-parts (i.e. if it is *μεριστή*) is conceptually distinct from the question of whether it has capacity-parts, finds confirmation in the fact that Aristotle appeals to *both* types of parts in order to ask, and solve, the empirical question of what happens to the soul's capacities – initially viewed as a unified collection of perceptually distinguishable activities in a living being – when certain animals or plants in which soul resides are divided into (bodily) spatial-parts.

⁴⁴³ E.g. *DA* 1.1, 402b10-13.

⁴⁴⁴ Cf. in this respect *NE* 1.13, 1102a27-32, where Aristotle suggests that the question of the soul's parts revolves around the question of whether soul has parts in the *same* way that bodies and all other divisible things have parts, which way seems to amount to being *spatially divisible*: ταῦτα δὲ πότερον διώρισται καθάπερ τὰ τοῦ σώματος μόρια καὶ πᾶν τὸ μεριστόν, ἢ τῷ λόγῳ δύο ἐστὶν ἀχώριστα πεφυκότα καθάπερ ἐν τῇ περιφερείᾳ τὸ κυρτὸν καὶ τὸ κοῖλον, οὐθὲν διαφέρει πρὸς τὸ παρόν.

⁴⁴⁵ Unless one thinks that the 'whole' of soul can also be a 'part', a thesis which Aristotle seems to accept. Cf. Corcilius and Gregoric (2010). In classical mereology, this would be called an 'improper part'. Cf. Haslanger (1994).

However, before he does so, Aristotle first raises a Platonic question by which to motivate his *DA* 1.1 puzzle about the divisibility of soul. He writes:

So (i) it is apparent from what we have said that it is not in virtue of being derived from the elements that cognition (γινώσκειν) belongs to the soul (ὑπάρχει τῇ ψυχῇ), nor is it correct or true to say that the soul is moved (κινεῖσθαι). But (ii) since cognition *does* belong to the soul (τὸ γινώσκειν τῆς ψυχῆς ἐστὶ), as well as the act of perceiving (τὸ αἰσθάνεσθαι), opining (τὸ δοξάζειν), irrational appetite (τὸ ἐπιθυμεῖν), rational wishing (βούλεσθαι), and desires generally (ὅλως αἱ ὀρέξεις), and since motion in respect of place as well is produced in animals by the agency of soul (ὑπὸ τῆς ψυχῆς),⁴⁴⁶ along with growth, maturity, and decay, (iii) a question arises as to whether each of these belongs to the whole soul (ὅλη τῇ ψυχῇ), such that we think (νοοῦμέν) and perceive (αἰσθανόμεθα) and are moved (κινούμεθα), and along with each of the rest, we both act and suffer (ποιοῦμέν τε καὶ πάσχομεν), or (iv) do we do each different thing with a different part (μορίοις ἑτέροις ἕτερα) [of soul]? And (v) does the activity of living (τὸ ζῆν) belong to some one of these [parts] in particular, or to more than one, or to all of them, or could life have some other cause (αἴτιον)? (*DA* 1.5, 411a24-b5)⁴⁴⁷

Contrary to one standard view of Aristotle's hylomorphism, which holds that soul is not the proper subject of any attributes,⁴⁴⁸ Aristotle's claims in (i) and (ii)

⁴⁴⁶ These claims – which motivate the puzzles which follow – are a challenge to the common view that Aristotle does not consider the soul to be a *per se* subject of any psychological attributes. Some commentators, for example, Themist. (*Paraphrasis in de anima*, 37.27-28), solve this problem by simply rewriting the entire argument to make it appear as though Aristotle predicates the psychological attributes of the human being. Hicks (1907, 299), reinterprets its obvious sense to make it conform to this idea as well. Others, such as Polansky (2007, 136), claim that by means of the first person plural, Aristotle 'respects the earlier point that the human or living being by means of the soul engages in various tasks.' However, the latter view is consistent with the claim that these capacities belong *to the soul*, and are done *by the soul* (ὑπὸ τῆς ψυχῆς), when we (as the composite) think and perceive, etc.

⁴⁴⁷ φανερόν οὖν ἐκ τῶν εἰρημένων ὥς οὔτε τὸ γινώσκειν ὑπάρχει τῇ ψυχῇ διὰ τὸ ἐκ τῶν στοιχείων εἶναι, οὔτε τὸ κινεῖσθαι αὐτὴν καλῶς οὐδ' ἀληθῶς λέγεται. ἐπεὶ δὲ τὸ γινώσκειν τῆς ψυχῆς ἐστὶ καὶ τὸ αἰσθάνεσθαι τε καὶ τὸ δοξάζειν, ἔτι δὲ τὸ ἐπιθυμεῖν καὶ βούλεσθαι καὶ ὅλως αἱ ὀρέξεις, γίνεται δὲ καὶ ἡ κατὰ τόπον κίνησις τοῖς ζῴοις ὑπὸ τῆς ψυχῆς, ἔτι δ' αὔξη τε καὶ ἀκμὴ καὶ φθίσις, πότερον ὅλη τῇ ψυχῇ τούτων ἕκαστον ὑπάρχει, καὶ πάσῃ νοοῦμέν τε καὶ αἰσθανόμεθα καὶ κινούμεθα καὶ τῶν ἄλλων ἕκαστον ποιοῦμέν τε καὶ πάσχομεν, ἢ μορίοις ἑτέροις ἕτερα; καὶ τὸ ζῆν δὴ πότερον ἐν τινὶ τούτων ἐστὶν ἐνὶ ἡ καὶ ἐν πλείοσιν ἢ πᾶσιν, ἢ καὶ ἄλλο τι αἴτιον;

⁴⁴⁸ On the debate over whether soul can be considered a ὑποκείμενον, cf. Shields (1988) and (1995), and the criticisms of Granger (1995) and (1995a).

seems to affirm that, even though the soul is not composed of the elements, and even though it can't be moved, the soul still is the proper subject of psychological attributes, at least in the sense that it is the *agent* of the above mentioned affections that occur in ensouled bodies (in which case the soul need not suffer motion as a patient, which is the main claim Aristotle denies in *DA* 1). Having affirmed that the soul (and not the body or the composite) is the primary cause of such psychological activities, Aristotle goes on to raise a puzzle about the relation of these activities to the soul itself.

It is important to note that Aristotle's question does not assume that each of the psychological activities listed (cognising, desiring, opining, etc.) is *itself* a 'part' of the soul. If it did, Aristotle's puzzle would be a version of the seventh scientific puzzle from *DA* 1.1, which concerns which soul parts are distinct from one another by nature.⁴⁴⁹ Rather, Aristotle's question here concerns whether we should understand different psychological activities as being performed *by* a distinct part of the soul, or by the whole soul.

Of course, it remains open that Aristotle's investigation might result in the discovery that *every* different activity of soul is done by a different soul part.⁴⁵⁰ If so, every psychological capacity will turn out to be a soul part. But so far, he has only explicitly mentioned *two* candidates for soul parts – the intellect (νοῦς) and the perceptive capacity (αἰσθητικόν).⁴⁵¹ For these reasons, Aristotle's initial question is likely not concerned with *what* parts the soul has, but with *how* the soul's activities

⁴⁴⁹ *DA* 1.1, 402b9-11.

⁴⁵⁰ However, Aristotle argues against a one-to-one relationship between soul-parts and different soul capacities in *DA* 3.9, 432a22-b13. Cf. Johansen (2013, 246-51).

⁴⁵¹ *DA* 1.1, 402b12-13. One might also think that the ὁρεκτικόν is conceived of as a soul part at *DA* 1.4, 408a13, but it is not labelled as such.

are related to soul *qua* whole or *qua* having parts (whatever or how many they may be).

This question, as with many others in *DA* 1, has a Platonic background. Aristotle's initial formulation of the question evokes *Rep.* 4, where Plato discusses an almost identical problem about the soul:

But it is difficult to determine if it is with the same thing [sc. in soul] that we perform each of these [sc. types of action], or since they are three, if we do one action by one thing, and another by another (ἄλλο ἄλλῳ). For instance, do we (a) learn by one thing (ἐτέρῳ), and become angry by another (ἄλλῳ) of the things in us, and again, by a third one desire those pleasures which concern nutrition and reproduction and as many of those that are kindred to these, or (b) is it with the whole soul (ὅλη τῇ ψυχῇ), relative to each case (καθ' ἕκαστον αὐτῶν), that we perform these actions, whenever we begin to act. (*Rep.* 4, 436a8-b2)⁴⁵²

Here, Plato poses the same dilemma as Aristotle: is it (a) by *different parts*⁴⁵³ of soul that we perform different activities, or (b) by the whole soul, whatever activity we may be doing? During the course of *Rep.* 4, Plato argues (in a preliminary way) that we should choose horn (a) of this dilemma, on the basis of his principle that the same thing cannot do or suffer opposites in the same respect at the same time, and the claim that the soul *does* in fact do opposite things at the same time and in the same respect (e.g. the soul's desiring to drink, and restraining its desire to drink).

6.4 *The Unity of Soul Challenge*

Aristotle, on the other hand, approaches this question a bit differently. He does not argue (even in a preliminary way) for the claim that soul does different things

⁴⁵² Τόδε δὲ ἤδη χαλεπὸν, εἰ τῷ αὐτῷ τούτῳ ἕκαστα πράττομεν ἢ τρισὶν οὓσιν ἄλλο ἄλλῳ· μανθάνομεν μὲν ἐτέρῳ, θυμούμεθα δὲ ἄλλῳ τῶν ἐν ἡμῖν, ἐπιθυμοῦμεν δ' αὖ τρίτῳ τινὶ τῶν περὶ τὴν τροφήν τε καὶ γέννησιν ἡδονῶν καὶ ὅσα τούτων ἀδελφά, ἢ ὅλη τῇ ψυχῇ καθ' ἕκαστον αὐτῶν πράττομεν, ὅταν ὁρμήσωμεν.

⁴⁵³ Strictly speaking, Plato does not refer to 'parts' here, but ambiguously to a 'thing' in the soul.

with different parts of itself. Instead, he turns to test out a certain way in which others have answered the question.

In what follows, Aristotle will claim that certain Academics answered this question by postulating that the soul performs different activities with different ‘parts’ of itself, which he interprets as *spatial-parts*, located in different areas of the body. However, Aristotle has major concerns with the explanatory power of this thesis. He writes:

Indeed, (i) some (τινες) say that the soul is spatially divisible (μεριστήν), and (ii) by one part (ἄλλῳ) it reasons (νοεῖν) and by another (ἄλλῳ) it irrationally desires (ἐπιθυμεῖν). So (iii) what is it then that holds together (συνέχει) the soul, if it is spatially divisible (μεριστή) by nature? For (iv) it is at least not the body which does this; for instead (v) it seems rather that the soul holds together the body; thus (vi) when the soul departs (ἐξελεύσεως), the body dissipates (διαπνέεται) and rots (σῆπεται). So (vii) if something different [sc. from the body] makes the soul one (μίαν), *that* (ἐκεῖνο) would be soul most of all. But (viii) it will be necessary again to investigate if *that* thing is one (ἓν) or complex (πολυμερές).⁴⁵⁴ For (ix) if *that* thing is one (ἓν), what is the reason why soul is also not straightaway one (ἓν)? But (x) if that thing is also spatially divisible (μεριστόν), again the account will inquire into what makes *it* one, and thus in this way will go on indefinitely (ἐπὶ τὸ ἄπειρον). (DA 1.5, 411b5-14)⁴⁵⁵

⁴⁵⁴ The term πολυμερές can be used in physical and non-physical contexts. It is found only once in Plato, at *Phaedr.* 238a3, where it refers to various species of *hubris*. Aristotle appears to cite this passage at *Pol.* 1311a33. At *PA* 1.5, 645b17 and *Poet.* 1459b1, this term refers to a single but complex *action*, whilst at *PA* 2.9, 654b16 it refers the backbone, which although physically one by continuity, is many-parted into vertebrae. At *PA* 4.6, 682a35, it refers to the physical parts of insects, and at *PA* 4.7, 683b5, it refers to bodily parts of Testacea. In all cases, Aristotle allows that a thing can be *both* one *and* πολυμερές, as long as there is an identifiable source of unity for the complex.

⁴⁵⁵ λέγουσι δὴ τινες μεριστήν αὐτήν, καὶ ἄλλῳ μὲν νοεῖν ἄλλῳ δὲ ἐπιθυμεῖν. τί οὖν δὴ ποτε συνέχει τὴν ψυχὴν, εἰ μεριστὴ πέφυκεν; οὐ γὰρ δὴ τό γε σῶμα· δοκεῖ γὰρ τοῦναντίον μᾶλλον ἢ ψυχὴ τὸ σῶμα συνέχειν· ἐξελεύσεως γοῦν διαπνέεται καὶ σῆπεται. εἰ οὖν ἕτερόν τι μίαν αὐτὴν ποιεῖ, ἐκεῖνο μάλιστα ἂν εἴη ψυχὴ. δεήσει δὲ πάλιν καθεῖνο ζητεῖν πότερον ἓν ἢ πολυμερές. εἰ μὲν γὰρ ἓν, διὰ τί οὐκ εὐθέως καὶ ἡ ψυχὴ ἓν; εἰ δὲ μεριστόν, πάλιν ὁ λόγος ζητήσει τί τὸ συνέχον ἐκεῖνο, καὶ οὕτω δὴ πρόεισιν ἐπὶ τὸ ἄπειρον.

Call Aristotle's argument the Unity of Soul Challenge: We can represent it in the following way:

1. Assume that soul, *S*, is divisible into spatial-parts. (i), (ii)
2. If any *X* is composed of spatial-parts, then there is a cause of the unity of *X*. (iii)
3. What unifies *S* is either body, *B*, or something else, *C*. (iii)
4. What unifies *S* is not *B*, for *S* unifies *B*, and not *vice versa*. (iv),(v)
5. If what unifies *S* is *C*, then *C* is properly *S*, and not the *S* composed of spatial-parts. (vii)
6. If what unifies *S* is *C*, then *C* is either (a) divisible into spatial-parts or (b) unitary. (viii)
7. If (b), and *S*=*C*, then *S* is not divided into spatial-parts, contrary to [1]. (ix)⁴⁵⁶
8. If (a), then *C* will also need a cause of its unity, *D*, which needs to be accounted for, and this will go on *ad infinitum* until we find an *S* without spatial-parts. (x)

Although the background to Aristotle's initial question about the relation of the soul's parts to its activities is the passage cited from *Rep.* 4, the view criticised in

⁴⁵⁶ Aristotle's use of the neuter *ἐν* to refer to the soul's unity suggest that he still has in mind *C* (*ἐκείνο*) as a candidate for soul, if *C* is that which holds together the soul's spatial-parts. He cannot simply mean that, if *C* doesn't need a cause of its unity, then there is no reason why *S* needs a cause of unity either. For the cause of *C*'s being unitary is the hypothesis that *C* does not have spatial-parts. This is the explanatory factor which makes *C* *de facto* one thing. However, the hypothesis under consideration is that soul *does* have spatial-parts. Thus, the argument only works if it presupposes *C*=*S*. In general, Aristotle thinks that insofar as something is not divisible (*ἀδιαίρετος*), spatially or otherwise, to that extent it is one. Cf. *Metaph.* Δ.6, 1016b3-6.

the Unity of Soul Challenge seems not to be based upon this dialogue, but upon the view of soul propounded in the *Timaeus*.

In this dialogue, Plato claims that the different kinds of soul are placed into distinct spatial locations in the body.⁴⁵⁷ The rational part of the soul is claimed there to be lodged in the head, the spirited part in the upper chest cavity, and the appetitive part in the liver.⁴⁵⁸ Such claims seem to provide a concrete basis for understanding the view Aristotle seeks to challenge here.⁴⁵⁹

We have seen that Aristotle has more than once criticised his predecessors for pluralizing the soul of individual living beings without accounting for its unity. For instance, in respect of the harmony theory of the soul discussed in *chapter 3*, Aristotle alleges that if soul is a harmony of bodily parts then there will be many souls in a body.⁴⁶⁰ In respect of Empedocles' theory of soul, he argues that the elements which compose soul seem to need a cause which holds them together as one thing.⁴⁶¹ Here the argument is similar: if the soul is divisible into spatial-parts, then like all extended things, it will need a principle of unity. Otherwise, why wouldn't the parts of soul

⁴⁵⁷ Even so, there is only one reference to these kinds as 'parts' (μέρεσιν), which occurs at *Tim.* 91e6. Interestingly, Plato doesn't use the term μόριον to refer to psychological parts in either the *Republic* or the *Timaeus*, unless one considers the 'portions' of being, sameness, and otherness at *Tim.* 36b2 to be 'parts'. In the *Timaeus*, μόριον is reserved for physical parts (61e3; 64a4; 64c1). However, μόριον can be predicated of a variety of different 'wholes' in Plato. It can refer, for example, to conceptual or definitional parts (for example, *Gorg.* 463d; *Leg.* 969b), formal parts (for example, *Soph.* 258a11; *Phileb.* 62d9); class parts (for example, *Polit.* 262a8; 265c7; *Tim.* 30c6); a part of number (for example, *Rep.* 525e; 526a); a part of a subject of learning (for example, *Rep.* 526d8).

⁴⁵⁸ Cf. *Tim.* 69e3-72d8.

⁴⁵⁹ Cf. Bastit (1996, 16-17), who connects the soul division of the *Timaeus* to *DA* 3.9, 432a15-23.

⁴⁶⁰ *DA* 1.4, 408a11-12.

⁴⁶¹ *DA* 1.5, 410b10-15.

separate, or seep out of the body? If no such principle is available, then soul doesn't have spatial-parts.⁴⁶²

6.5 *Platonist Presuppositions in the Unity of Soul Challenge*

Although Aristotle's argument is scientific in nature, it is not disinterested. Some of the terminology that he uses in The Unity of Soul Challenge suggests that he wants to appeal to evidence that a Platonist would find hard not to accept. The most striking textual evidence for this is found in premise 5, where Aristotle claims that the body cannot provide unity to the soul, because after the soul has departed, the body 'dissipates (διαπνέϊται) and rots (σῆπεται)'. Whilst this could be merely an empirical observation on Aristotle's part, it is more likely that Aristotle is evoking Plato's use of the term διαπνέϊσθαι, which occurs only a single time in his entire corpus, in *Phaed.* 80c4-5 (just a few lines away from the term σαπῆ in 80d1), in an argument which claims that, although the body is subject to slow dissipation and rotting, the soul is not.⁴⁶³

In this context, Plato argues that only things which have been compounded and put together (συντεθέντι τε καὶ συνθέντι) are likely to be decomposed or scattered,⁴⁶⁴ and that, because soul does not belong essentially to the class of compounded things, it is not subject to these destructive events. A similar claim is made in *Rep.* 10, where Plato all but admits that the soul cannot be immortal if it is really a composite thing (σύνθετον).⁴⁶⁵

⁴⁶² Pace Whiting (2002, 148), who thinks that the regress argument here applies to 'any sort of division of the soul into parts.'

⁴⁶³ Hicks (1907, 300) also takes Aristotle's language to be a reference to Plato, and takes it as evidence that Aristotle read καὶ διαπνέϊσθαι in the *Phaedo*, which is omitted in MS. family β. Even so, Aristotle is committed on other grounds to the view that soul provides for the unity of body. Cf. *Metaph.* M.2, 1077a21-23.

⁴⁶⁴ *Phaed.* 78c1.

⁴⁶⁵ *Rep.* 10, 611b.

This implies that Aristotle's strategy here is to prove, on grounds which would be affirmed by Plato himself, that if anything which is divisible into distinct spatial-parts entails its being composite, then an explanation will be needed to show how soul can be more unified and less subject to destruction than the body. If the Platonist cannot do this, then their belief in the principle of the soul's spatial divisibility cannot serve to explain the unity of the body or its functions, which is a phenomenon which Aristotle takes as a basic *explanandum*.

6.6 *Aristotle's Principle of Unity*

However, Aristotle has more reasons to doubt the Platonist view of the soul's divisibility than just an internal tension in Plato's philosophical claims in different dialogues. Aristotle's justification for premise 2 of the Unity of Soul Challenge seems to be drawn from the *Physics*, where he lays out a general principle of unity such that *anything* that is continuous and has pre-existing and distinct spatial-parts needs a source of unity which holds these distinct parts together, in virtue of which it may be called 'one' thing.⁴⁶⁶ Call this Aristotle's Principle of Unity.

Whilst in the *Physics* Aristotle rests his Principle of Unity to some degree upon stipulated definitions,⁴⁶⁷ he also gives an intuitive reason for accepting it: when there are distinct parts which compose extended objects, Aristotle points out, we can often discover the different ways those things are bound together so as to function as wholes. For example, sticks can be 'unified' by being tied together, and the parts of model airplanes can be 'unified' by the glue that holds together its parts.⁴⁶⁸ In this respect, the Unity of Soul Challenge amounts to asking what sort of 'glue' binds the

⁴⁶⁶ Cf. *Phys.* 4.10, 218a3-5.

⁴⁶⁷ Some of which, as Owen (1961, 95-6) points out, are drawn from Plato's *Parmenides*.

⁴⁶⁸ *Phys.* 5.3, 227a13-17.

spatial-parts of the Timaeian soul together, given that the body, on grounds given in the *Phaedo*, is too weak to perform this function.

Because the Unity of Soul Challenge suggests the arguments of *Metaph* Z. 17, 1041b11-33 and *Metaph.* H. 6, 1045a14-b23, it is important to highlight briefly both its similarity to and differences from these arguments. The argument of H.6, like the one here, is directed against a version of Platonism. It questions what the cause is of an individual man being ‘one’, if a man has to participate in the *two* Forms that define ‘man’ in order to be a man, i.e. ‘Animal’ and ‘Biped’.

Here however, Aristotle does not appear to be discussing how a single physical particular can have its being derived from multiple Forms, but rather, how soul can be physically unified or held together if it has multiple spatial-parts. For this reason, the argument of Z.17 parallels the Unity of Soul Challenge more closely. It asks what unifies the elements of things, such as the syllable *ba*. As in the Unity of Soul Challenge, the argument of Z.17 seems to be that, what unifies a thing composed of numerically distinct elements – such as the syllable *ba* –can’t be another *numerically* distinct *element*, – for example, *c* – because in this case, one will have to ask what unifies $b+a+c$.⁴⁶⁹

Without giving a determinate solution as to what this *non-elemental* unifying force might be, the idea of this argument and the Unity of Soul Challenge at least gesture at a similar point: Whenever some whole has elements or distinct spatial-parts, there exists something within the whole (perhaps not numerically distinct from the ‘whole’ itself) that (a) is distinguishable (e.g. in account) from the those elements or parts, and which (b) makes the parts to be (or function as) one thing.

⁴⁶⁹ How to interpret this passage, however, is notoriously controversial. Cf. Bostock (1994).

If this is right, it would confirm the interpretation of the Unity of Soul Challenge offered above: If soul has spatial-parts which are in some sense ‘elemental’ and spatially distinct, as the Academics allege, then one needs to posit a further principle (perhaps one that is not numerically distinct from the soul’s parts) in virtue of which the soul exists as one thing.

Despite Aristotle’s background justification for the premises in the Unity of Soul Challenge, it is important to emphasise that this argument is not devastating to the Timaeon account of soul. It could (at least in principle) be avoided by an Academic who claimed, for example, that every part of soul is intrinsically ‘sticky’.⁴⁷⁰ However, since such a ‘sticky part’ view does not seem to be a part of the doctrine in question, in lieu of a good explanation of how the soul’s spatial-parts hold together, the Platonic principle of soul’s spatial divisibility will be unable to provide an explanation of the soul’s unity in the body.

6.7 *The Whole-Part Challenge*

In the argument which follows, Aristotle lays aside the problem of the soul’s unity in order to focus on how the parts of the soul, whether understood as capacity-parts or spatial-parts, are related to the body. He writes:

But (i) someone might puzzle about what power each of the parts (μορίων) of soul holds in the body. For (ii) if the whole soul holds together the whole body, it is fitting also for each of the parts of soul to hold together some part of the body. But (iii) this seems (ἔοικεν) to be impossible. For (iv) it is difficult even to form an image (πλάσαι) of what sort of body part the intellect will hold together, and how it will do so. (DA 1.5, 411b14-19)⁴⁷¹

⁴⁷⁰ I thank Lindsay Judson for this observation.

⁴⁷¹ ἀπορήσειε δ’ ἂν τις καὶ περὶ τῶν μορίων αὐτῆς, τίς ἔχει δύναμιν ἕκαστον ἐν τῷ σώματι. εἰ γὰρ ἡ ὅλη ψυχὴ πᾶν τὸ σῶμα συνέχει, προσήκει καὶ τῶν μορίων ἕκαστον συνέχειν τι τοῦ σώματος. τοῦτο δ’ ἔοικεν ἀδυνάτῳ· ποῖον γὰρ μόριον ἢ πῶς ὁ νοῦς συνέξει, χαλεπὸν καὶ πλάσαι.

Here, Aristotle takes up the hypothesis initially suggested in the Unity of Soul Challenge, that soul is what holds the body together and makes it ‘one’. Aristotle argues that, if one accepts that the soul’s primary activity (along with whatever other activities it performs) is to ‘hold together’ the body, then this suggests that each of the soul’s parts – whatever parts there may be – will need to perform the function of holding together a part of the body. In Aristotle’s hylomorphic terminology, he is asking whether each spatial-part of the soul is the form of a specific organ or part of the body. Call this Aristotle’s Whole-Part Challenge. It can be formulated as follows:

1. Assume that every part of soul, *P*, exercises a power, *D*, in some part of the body, *B*. (i)
2. If (a) the whole of soul exercises the power of holding together the whole of the body, then (b) each *P* ought to hold together a certain *B*. (ii)
3. Intellect, *I*, is a *P*. (iv)
4. If (a), then *I* should hold together some *B*. [1-3]
5. But it seems that there is no *B* that *I* holds together. (iv)
6. Thus, it seems impossible for (b) to be true. (iii)
7. Thus, (a) seems to be false. [Implied]⁴⁷²

The first thing to note is that premise 5 hearkens back once again to Aristotle’s scientific method for inquiring into the adequacy of a scientific definition or first principle: definitions fail to be scientific either if they fail to produce knowledge of something’s *per se* attributes as they are given in *phantasia*, or if they cannot easily

⁴⁷² Although Aristotle does not draw this conclusion explicitly, it is implied by *modus tollens*.

help us to guess (εικάσαι) at such attributes.⁴⁷³ Aristotle's complaint in (iv) is that we can neither form an image (πλάσαι) in *phantasia* of what bodily part the intellect will hold together, nor how it will do so. This suggests that any first principle of soul which entails that *every* part of soul holds together a part of the body cannot be correct (at least, under the assumption that intellect is a real part of soul).

Second, although the conditional of premise 2 need not be accepted, since it commits the fallacy of division, it is nevertheless justified if, as Aristotle seems to think, the Academics in question conceived of the soul's parts as spatial-parts, and conceived of these parts as being spatially aligned with the body's spatial-parts. If, for example, I claimed that my soul consisted of three parts, one in my head, and two in my torso, as the *Timaeus* does, and I also claimed that my whole soul holds together my body, it is perfectly natural to ask if the soul in my head holds together my head.

Generally speaking, however, this argument will no doubt appear quite weak to a modern reader, especially in respect of premise 5. We in fact have no difficulty imagining our intellect to be essentially related to a part of our body, namely, our brain. Further, we might even go so far as to say that the electro-chemical activity therein in a way 'holds together' our brain, since when this activity ceases the brain decays. On such a supposition, Aristotle's argument appears quite antiquarian.

However, we do not have to read Aristotle's argument here as simply based upon ancient naiveté about the role of the brain in intellectual processes. In fact, there is a more charitable way to read the Whole-Part Challenge which mirrors a central problem in contemporary philosophy of mind.

As I noted above, Aristotle does not think that if a part of the soul holds together a part of the body, then the *only* function of that soul part is to hold together a

⁴⁷³ DA 1.1, 402b25-403a2.

part of the body; for the Academic view in question is introduced as one which holds that one part of the soul reasons, and another part of it desires, not one which holds that each part of the soul holds together a distinct part of the body.

For this reason, I take it that Aristotle would agree that a necessary condition for distinguishing spatial-parts of the soul from one another (if soul has such parts), is that such parts manifest different activities in different parts of the body. However, the Whole-Part Challenge suggests that there is at least one soul part, the intellect, which cannot be located in the body in this way.

The reason for this is that intellect, when it is active (e.g. when we are thinking), need not manifest, from either a first or a third-person perspective, any observable change in the body. Such being the case, it is problematic to claim that intellect is located within a particular bodily part or organ, and *a fortiori*, that it holds this organ together.⁴⁷⁴ For similar reasons, it is sometimes difficult or impossible even today for doctors to know if patients are conscious or unconscious when in certain coma states, as there is currently no known amount and type of brain activity which is sufficient (apart from external behaviour) to guarantee consciousness. For this reason, I suspect that Aristotle is relying upon the idea that there is no *empirical evidence* for believing that the activities of the intellect are particularly located in any part of the body.⁴⁷⁵ If no part of the body necessarily or evidently manifests motion whilst intellectual activity is occurring, then *a fortiori*, there is no good reason for believing that intellect would hold together a particular part of the body.

⁴⁷⁴ Such is in essence the interpretation of Philop. *In de anima* 199.20-33.

⁴⁷⁵ William of Ockham discusses this problem in *Quodlibetal Quaestiones* 1.q.12, where, to the claim that the rational soul is the form of the whole living body, it is objected that intellectual experiences occur mainly in the head. Ockham replies (r.4) that intellectual experience can also occur in the foot, because we can have a cognitive experience of pain there.

Importantly, the Whole-Part Challenge, as I have formulated it, neither refutes the Academic assumption in premise **1**, that every part of soul, and its corresponding power, is related to some part of the body, nor the view that the soul might have spatial-parts which hold together parts of the body (if, that is, one can answer the Unity of Soul Challenge). Instead, what the argument refutes is the idea that *every* part of the soul can be imagined to have the function holding some body part *X* together. The refutation is supported by Aristotle's scientific method of inquiry: we cannot imagine what part of the body intellect would hold together, but this is a consequence of the Platonic first principle on offer.

So far then, Aristotle has first argued that, if the soul has spatial-parts, one ought to provide an account of its unity which is not based upon the unity of the body. Second, he has argued that, regardless of what kinds of parts the soul has, one will need to specify what relation these parts and their powers have to the body, especially since not all parts of the soul can be seen as having the function of 'holding together' a particular part of the body. What he has not done yet is to specify what sort of relation obtains between the parts of the soul and the parts of the body. In the next section, Aristotle begins to give a sketch of this relationship.

6.8 *Life in the Division of Body and Soul*

In his final set of arguments in *DA* 1, Aristotle attempts to explain how the soul's parts are related to the body's parts. In so doing, he provides a fuller answer to the question of whether the soul is *μεριστή ἢ ἀμερής*. He writes:

But (i) it appears that even plants, and some insects, live after having been divided (*διαιρούμενα*), (ii) as possessing a soul which is the same in kind, even if not in number (*τὴν αὐτὴν ἔχοντα ψυχὴν τῷ εἶδει, εἰ καὶ μὴ ἀριθμῷ*); for (iii) each of the parts have perception and move in respect of place for a certain period of time. But (iv) if they do not continue to live (*διατελοῦσιν*),

this is not absurd. For (v) they do not possess organs (ὄργανα) so that they would continue to preserve their nature (σώζειν τὴν φύσιν). But (vi) nevertheless, in each of the parts (ἐν ἑκατέρῳ τῶν μορίων) all the parts of the soul exist (ἅπαντ' ἐνυπάρχει τὰ μόρια τῆς ψυχῆς), and (vii) these two souls are uniform with one another and with the whole soul (ὁμοειδεῖς ἐστὶν ἀλλήλαις καὶ τῇ ὅλῃ);⁴⁷⁶ (viii) which implies that the parts of soul are not separable from one another (οὐ χωριστὰ ὄντα), but soul as a whole is divisible (ὥς διαιρετῇ οὕσῃ).⁴⁷⁷ But (ix) even the principle in plants seems to be a kind of soul (ψυχὴ τις); for (x) this alone is shared in common (κοινωνεῖ) between animals and plants, and (xi) it is separated (χωρίζεται) from the perceptive principle

⁴⁷⁶ Although the MS tradition is confused, I here adopt the reading of Hicks (1907, 302-202), who offers an exhaustive set of reasons for preferring ὁμοειδεῖς...ἀλλήλαις to ὁμοειδῆ...ἀλλήλοις. If one were to choose the latter formulation (adopted by the OCT), such that Aristotle was arguing that the *parts of soul* are uniform with one another, one would have to understand Aristotle's idea to be that each capacity-part of soul *in one segment* of a plant or insect is uniform with a corresponding capacity-part of soul *in the other segment*, and *not* that every different capacity-part of soul (such as the perceptive capacity, nutritive capacity, etc.) is uniform with every other capacity-part. This not only seems absurd, but it would force us to interpret Aristotle as committing the same error that he accuses certain predecessors of at *DA* 1.5, 411a16-23, who thought that a whole soul must be uniform with each of its portions (Cf. *chapter* 5, sect. 9). This, according to Aristotle, would entail that *all souls* have exactly the same capacity-parts. Thus, here, Aristotle must be arguing that *whole souls* which have *distinct* capacity-parts (e.g. plants which have the capacity for growth, but not the capacity of local motion that insects have) can be uniform with *other whole souls* which have those same capacity-parts (i.e. the soul of some insects can be uniform with the soul of other insects, and plants with plants). He cannot be arguing that *every* soul, or every capacity-part of soul, is uniform with every other soul or capacity-part of soul.

⁴⁷⁷ I here reject Ross's insertion of οὐ in the OCT, which is supported by no MSS. Ross (1961, 210) seems to understand Aristotle to be claiming that any *X* and *Y* are ὁμοειδῆ if *X* and *Y* are not separable or divisible from one another. However, whether we take inseparability existentially or spatially (Ross does not specify which) – inseparability in account being impossible here – it is unlikely that Aristotle would take inseparability alone to be sufficient for two things to be ὁμοειδῆ. A colour, for instance, is neither spatially nor existentially separate from a surface, but a colour (a quality) is not ὁμοειδές with surface (a quantitative magnitude). Aristotle seems rather to understand being the same in kind in terms of possessing the same capacity-parts. Thus, if a kind *K* has the same capacity-parts as kind *Z*, then *K* and *Z* are ὁμοειδῆ with one another. Since the two segments of a divided plant both have the same capacity-parts, their souls can be viewed as ὁμοειδεῖς with one another, and with the original undivided whole. Sense might be gathered from Ross's reading, if one thought that Aristotle was claiming that the parts of the soul are ὁμοειδῆ with one another *insofar as* they are not separable. However, this seems unlikely, given that Aristotle understands uniformity in terms of difference in genus or species (cf. *DA* 1.1, 402b2-4), and separability does not seem to be a proper genus or species.

(αἰσθητικῆς ἀρχῆς), but (xii) no being with perception is without it. (DA 1.5, 411b19-30)⁴⁷⁸

Here Aristotle gives an empirical argument against making a one-to-one correspondence between soul parts and places in the body. As I argued above, the proper interpretation of the argument turns upon the distinction between capacity-parts and spatial-parts. Call this argument the Divisibility of Soul Argument:

1. Some living beings, *B*, can be divided into spatial-parts, *S*₁ and *S*₂, each of which possess the same capacities of soul, *C*, as an undivided *B*. (iii)
2. If two things *X* and *Y* possess the same *C*, then *X* and *Y* have the same parts of soul, *P*, but not a numerically identical soul. [Assumed]
3. Thus, some *B*s, and their spatial-parts, *S*₁ and *S*₂, after division, have the same *P*s, but not a numerically identical soul. (i)-(ii)
4. But if *S*₁ and *S*₂ have the same *P*s, then the souls of *S*₁ and *S*₂ are uniform with one another, and uniform with the soul of *B*. (vi)⁴⁷⁹
5. Thus, the spatial division of *B* does not result in two different kinds of soul, but only two uniform whole souls, *W*₁ and *W*₂, which reside in *S*₁ and *S*₂. (viii)
6. Thus, to generalize, in virtue of the division of some *B* into spatial-parts *S*₁...*S*_n, soul can be *per accidens* spatially divided into numerically distinct

⁴⁷⁸ φαίνεται δὲ καὶ τὰ φυτὰ διαιρούμενα ζῆν καὶ τῶν ζώων ἓνια τῶν ἐντόμων, ὡς τὴν αὐτὴν ἔχοντα ψυχὴν τῷ εἶδει, εἰ καὶ μὴ ἀριθμῷ· ἐκάτερον γὰρ τῶν μορίων αἴσθησιν ἔχει καὶ κινεῖται κατὰ τόπον ἐπὶ τινὰ χρόνον. εἰ δὲ μὴ διατελοῦσιν, οὐθὲν ἄτοπον· ὄργανα γὰρ οὐκ ἔχουσιν ὥστε σώζειν τὴν φύσιν. ἀλλ' οὐδὲν ἦττον ἐν ἐκατέρῳ τῶν μορίων ἅπαντ' ἐνυπάρχει τὰ μόρια τῆς ψυχῆς, καὶ ὁμοειδεῖς ἐστὶν ἀλλήλαι καὶ τῇ ὅλῃ, ἀλλήλοις μὲν ὡς οὐ χωριστὰ ὄντα, τῇ δ' ὅλη ψυχῇ ὡς διαιρετῇ οὐσίῃ. ἔοικε δὲ καὶ ἡ ἐν τοῖς φυτοῖς ἀρχὴ ψυχῆ τις εἶναι· μόνης γὰρ ταύτης κοινωνεῖ καὶ ζῶα καὶ φυτά, καὶ αὕτη μὲν χωρίζεται τῆς αἰσθητικῆς ἀρχῆς, αἴσθησιν δ' οὐθὲν ἄνευ ταύτης ἔχει.

⁴⁷⁹ As Hicks (1907, 303) notes, 'ὁμοειδής = ἡ αὐτὴ τῷ εἶδει.'

whole souls, $W_1...W_n$, each of which possesses (for a time) all the Ps of the original B , but no W is *per se* spatially divisible into different Ps . [Implied]

On the basis of the Divisibility of Soul Argument, Aristotle can now show, against his Academic opponents, that if the soul has capacity-parts, it at least cannot be the case that these parts can be distinguished from one another on the basis of a spatial division of the body, as they would be on the Timaeian picture of soul.⁴⁸⁰ In particular, Aristotle's argument shows that whatever part(s) of soul which produce(s) (a) perception, (b) movement, and (c) growth, cannot be separated from one another by spatial division.⁴⁸¹

Further, the Divisibility of Soul Argument implies that the soul is *internally unified* in such a way as to bear a number of distinct capacities, even once a living body is divided. In this way, Aristotle suggests that the soul in fact has a greater sort of unity than the body.⁴⁸²

However, how is the claim that the soul's parts cannot be separated from one another by bodily division to be reconciled with Aristotle's claim in (iv) and (v) that the divided bodies of insects do not continue to live long, because they do not have the proper organs to preserve their nature? Although Aristotle has not yet identified the soul as the fulfilment of a natural instrumental body, the answer seems to be that he is already thinking of the body's organs instrumentally, namely, as structures

⁴⁸⁰ Bos (2007, 101) argues that this is '[...] the sufficient but also the only basis for [Aristotle's] anti-Platonic thesis that the 'parts' of the soul can be distinguished but not separated.'

⁴⁸¹ However, nothing rules out the claim that the soul's parts are located in more than one place in the body.

⁴⁸² If this interpretation is correct, it is an independent vindication of Johansen's (2012, 53) claim 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.'

which the soul must use in order to carry out its functions, even if these organs are not sufficient to materially determine what powers the soul continues to possess after division (at least, in cases of a division which occurs after a living being has developed all its organs).⁴⁸³

This suggests that Aristotle thinks that the soul is omnipresent in the body in a way analogous to how a craftsman is ‘omnipresent’ to the tools of her craft. In this picture, a craftsman may be understood as distinct from these tools, but, in order to act as a craftsman, she needs to be able to use certain tools in the tool shop. Whilst some of these tools may be lost without detriment to the livelihood of the craftsman, if the craftsman’s essential tools are lost, then she will eventually have to cease being a craftsman. Such an idea was in fact suggested earlier by Aristotle in *DA* 1.3, 408b18-25, where he makes an argument which assumes that the organ of vision, but not the power of vision, can be weakened by old age. This assumes that the power of vision belongs primarily to the soul, not to the eyes.

6.9 A Potential Objection

One might object, however, that Aristotle’s discussion of the cutting up of certain plants and insects does not represent a real solution to the *DA* 1.1 puzzle about the soul’s spatial divisibility, for the simple reason that Aristotle apparently needs to revisit this topic in *DA* 2.1 and 2.2.⁴⁸⁴ In the first of these passages, Aristotle argues:

Thus, (i) it is not unclear that the soul, or certain parts of soul (ἢ μέρη τινὰ αὐτῆς), if it is spatially divisible (μεριστὴ) by nature, are not separable from

⁴⁸³ This qualification is important, for Aristotle is committed to the idea that parts of the soul only come into actual existence once certain organs have been developed, but he seems to think that such soul parts can remain actual even after the dissolution of some of these organs. Cf. *DA* 1.4, 408b19-25, and Caston’s note in Alexander of Aphrodisias (2012, 119-20 n. 249).

⁴⁸⁴ I thank Thomas Johansen and Paolo Fait for both pointing out this problem to me.

the body. For of some things, the fulfilment belongs to the [sc. bodily] parts themselves (ἐνίων γὰρ ἡ ἐντελέχεια τῶν μερῶν ἐστὶν αὐτῶν). But nothing prevents some (ἐνιά) [sc. parts of soul], at least, from being separable, if they are not the fulfilments of any body at all. (DA 2.1, 413a3-7)⁴⁸⁵

Traditionally, commentators have taken Aristotle to be arguing that, if the soul is divisible into parts (μέρη) (for example, eyesight), then those parts of the soul will be the fulfilments of certain parts (μέρη) of the body (for example, the eyes).

However, nothing in this passage commits Aristotle to the view of the soul's parts that he refutes in DA 1.5, namely, that not every part of the soul will be located in a specific bodily place. It is open for Aristotle to affirm, for example, that the soul's capacity-parts are distributed amongst multiple organs or places in the body.

Moreover, regardless of how we interpret this passage, in DA 1.5, Aristotle is not arguing that the soul, or certain parts of it, is inseparable *from the body*. Rather, in DA 1.5, Aristotle is arguing that different 'parts' of soul aren't separable *from one another* within individual and segmented living beings,⁴⁸⁶ and hence, are not related to one another as spatial parts which exist apart from one another in different places in the body. This result is not overturned by the above passage.

Similarly, when the question about soul divisibility comes up again in DA 2.2, we find further important differences from DA 1.5. There, Aristotle writes:

But now let it be sufficient to say that the soul is the principle of the capacities we spoke of and that by these things it is defined, namely, by the capacity for nutrition, perception, reasoning, and local motion. But whether each of these

⁴⁸⁵ ὅτι μὲν οὖν οὐκ ἔστιν ἡ ψυχὴ χωριστὴ τοῦ σώματος, ἢ μέρη τινὰ αὐτῆς, εἰ μεριστὴ πέφυκεν, οὐκ ἄδηλον· ἐνίων γὰρ ἡ ἐντελέχεια τῶν μερῶν ἐστὶν αὐτῶν. οὐ μὴν ἄλλ' ἐνιά γε οὐθὲν κωλύει, διὰ τὸ μηθενὸς εἶναι σώματος ἐντελεχίας.

⁴⁸⁶ The closest Aristotle gets to such a thesis is the idea that the nutritive soul, which he only identifies as a principle in plants, can be separated (χωρίζεται) from the perceptive soul (DA 1.5, 412a28-30). I take it that Aristotle means that a whole plant soul can exist separately from a whole perceptive soul, insofar as plants and animals exist as spatially independent of one another.

capacities is a soul or a part of soul (ψυχὴ ἢ μόνιον ψυχῆς), and if a part (μόριον), whether it is such as to be separable in account only, or also in place (χωριστὸν λόγῳ μόνον ἢ καὶ τόπῳ), concerning some [sc. of these parts] it is not difficult to see, but some present a puzzle. For just as in the case of plants some parts evidently live even when separated from one another, such that the soul in each plant is one in fulfilment, but in potentiality many, so also in this way we see other differences (διαφορὰς) of soul occur in insects (ἐντόμων) which have been cut into two; for each of the parts (μερῶν) [sc. of the insect] has perception and locomotion, and if perception, also *phantasia* and desire; for wherever there is perception, there is also pain and pleasure, and wherever these are, from necessity there is also appetite (ἐπιθυμία). But concerning intellect and the theoretical capacity (τοῦ νοῦ καὶ τῆς θεωρητικῆς δυνάμεως) nothing is yet apparent, but it seems to be a different genus of soul, and alone capable of being separated (ἐνδέχεσθαι χωρίζεσθαι), just as the eternal is from the destructible.⁴⁸⁷ But the remaining parts (μόρια) of the soul, as is apparent from what we have said, are not separable in the way that some say (τινὲς φασιν); but it is apparent that that they are different (ἕτερα) in account. (DA 2.2, 413b11-29)⁴⁸⁸

Despite the overlap in content between this passage and DA 1.5, a close reading of the argument shows that Aristotle is no longer asking whether or not the soul is divisible into spatial-parts located in different parts of the body, as certain Academics thought. Instead, Aristotle has two new and different worries: first, how to distinguish a soul part from a soul capacity, which is in fact the seventh scientific puzzle of DA 1.1, and second, whether or not his claim at the end of DA 1.5 – that the parts of the soul

⁴⁸⁷ See chapter 5.

⁴⁸⁸ νῦν δ' ἐπὶ τοσοῦτον εἰρήσθω μόνον, ὅτι ἐστὶν ἡ ψυχὴ τῶν εἰρημένων τούτων ἀρχὴ καὶ τούτοις ὥρισταί, θρεπτικῷ, αἰσθητικῷ, διανοητικῷ, κινήσει. πότερον δὲ τούτων ἕκαστόν ἐστι ψυχὴ ἢ μόνιον ψυχῆς, καὶ εἰ μόνιον, πότερον οὕτως ὥστ' εἶναι χωριστὸν λόγῳ μόνον ἢ καὶ τόπῳ, περὶ μὲν τινῶν τούτων οὐ χαλεπὸν ἰδεῖν, ἔνια δὲ ἀπορίαν ἔχει. ὥσπερ γὰρ ἐπὶ τῶν φυτῶν ἔνια διαιρούμενα φαίνεται ζῶντα καὶ χωρίζομενα ἀπ' ἀλλήλων, ὡς οὔσης τῆς ἐν αὐτοῖς ψυχῆς ἐντελεχεία μὲν μιᾷ ἐν ἑκάστῳ φυτῷ, δυνάμει δὲ πλειόνων, οὕτως ὁρῶμεν καὶ περὶ ἐτέρας διαφορὰς τῆς ψυχῆς συμβαῖνον ἐπὶ τῶν ἐντόμων ἐν τοῖς διατεμνομένοις· καὶ γὰρ αἰσθησιν ἑκάτερον τῶν μερῶν ἔχει καὶ κίνησιν τὴν κατὰ τόπον, εἰ δ' αἰσθησιν, καὶ φαντασίαν καὶ ὄρεξιν· ὅπου μὲν γὰρ αἰσθησις, καὶ λύπη τε καὶ ἡδονή, ὅπου δὲ ταῦτα, ἐξ ἀνάγκης καὶ ἐπιθυμία. περὶ δὲ τοῦ νοῦ καὶ τῆς θεωρητικῆς δυνάμεως οὐδὲν πω φανερόν, ἀλλ' ἔοικε ψυχῆς γένος ἕτερον εἶναι, καὶ τοῦτο μόνον ἐνδέχεσθαι χωρίζεσθαι, καθάπερ τὸ ἀίδιον τοῦ φθαρτοῦ. τὰ δὲ λοιπὰ μέρη τῆς ψυχῆς φανερόν ἐκ τούτων ὅτι οὐκ ἔστι χωριστά, καθάπερ τινὲς φασιν· τῷ δὲ λόγῳ ὅτι ἕτερα, φανερόν·

within an individual living being, being not separable from one another (οὐ χωριστὰ ὄντα) – generalises to *all* parts of the soul, and in particular, to the intellect.

In effect, Aristotle is reaffirming that nutritive souls and some perceptive souls do not have spatially separable parts, because such souls cannot be separated from one another by bodily division. What he is now arguing is that this explanation does not clearly extend to the intellectual part of soul. In fact, one could make a pretty easy *prima facie* case why it wouldn't. If I cut off my hand, it may twitch and retain signs of life for awhile, but to say that it retained a capacity for thinking might seem a little strange.

Another way of posing Aristotle's question here would be to ask, is an intellectual soul only one soul in fulfilment, but potentially many intellectual souls? Aristotle's answer is surely no, but his suggestion that intellect is separable in place and in account is not easy to understand, given that he explicitly claims, contra the *Timaeus*, that intellect is not extended.⁴⁸⁹ I shall not venture an explanation here, but it should suffice to say that this problem does not overturn the results of *DA* 1.5, and in fact, seems to build upon them.

6.10 Conclusion

I have argued above that Aristotle's follows his scientific method of inquiry in testing out the Academic principle that the soul is spatially divisible within individual beings, and that, by so doing, he solves the puzzle from *DA* 1.1 about whether soul is *μεριστή ἢ ἀμερής*. I argued that this puzzle is neither to be read as asking whether or not the soul has capacities, or capacity-parts, nor is it to be read taxonomically, as asking what sorts of soul the 'class' of soul includes. Instead, I showed that the sense

⁴⁸⁹ *DA* 1.3, 407a2-3. For a fuller account of Aristotle's account of intellect and its separability, cf. Burnyeat (2008), and Miller (2012).

that Aristotle gives these terms elsewhere, and in particular, in *DA* 1.5, shows that he is asking whether or not the soul's powers within the body can be explained by the thesis that its parts are spatially separate from one another in the body, as Plato argued for in the *Timaeus*. I have further argued that Aristotle's arguments in *DA* 1.5 provide an initial (even if partial) solution to this puzzle.

I have further shown that Aristotle accomplishes his critique of the Academic thesis the soul has spatial-parts in the Unity of Soul Challenge by showing that it is inconsistent with Plato's claims about the unity of soul and body in both the *Republic* and the *Phaedo*, and Aristotle's own Principle of Unity, and because this theory conflicts empirically with the fact that various psychological capacities cannot be separated (and are sometimes duplicated) when living bodies are dissected. I also showed that, in the Whole-Part Challenge, Aristotle shows that the Academic thesis about the spatial-parts of the soul and the role these parts play in the body has a difficulty in accounting for the role of intellect in the body, and that this difficulty prepares the ground for some of Aristotle's later worries about the separability of intellect. These problems, I claimed, led Aristotle to the general idea, expressed in the Divisibility of Soul Argument, that the soul is not spatially divisible into distinct parts, but is spatially divisible into further whole souls which are uniform with one another.

Finally, I argued that Aristotle's treatment of soul division in *DA* 2.1 and 2.2 does not overturn or challenge this conclusion, but only adds new layers of complexity to it; the first passage shows that, even if the soul has parts which are the fulfilments of certain bodily organs, not every part needs to be such a fulfilment, whilst the second passage shows that the intellectual part of soul may not be subject to

the general rule about soul being potentially divisible into further whole souls in virtue of the body's division.

The main result of this final part of Aristotle's inquiry in *DA* 1, however, is the establishment of a further ancillary doctrine related to the Hylomorphic Definition of Soul, namely, the idea that the souls' parts will be related to the body in a form-like way, being uniformly present to the spatially extended body, whilst not being quantitatively divisible in the way that body is.

Conclusion to the Study

For in all discoveries, the results of previous labours that have been handed down by others have been successively increased by those who have taken them up later, whereas the original discoveries generally make an advance that is small at first, but much more useful than the development which later springs out of them. For it may be that 'the starting point is the greatest of all things'...

– **Aristotle**, *Sophistical Refutations* 183b17-23

The End of the Path

The aim of the present work has been to show that the common belief that Aristotle wages his critique of the predecessors from the vantage point of his own fully worked out hylomorphic psychology cannot be sustained. Instead, I have tried to show that Aristotle makes progress towards establishing the Hylomorphic Definition of Soul and the Hylomorphic Causality Thesis by analysing his predecessors' first principles and definitions of soul.

I have argued that Aristotle accomplishes this task by following his scientific method of inquiry, which consists in the collection, arranging, rearranging, and testing out of the various explanations of the soul's demonstrable attributes, in accordance with the criteria for scientific definitions he advocates in *APo.* 2.8. By doing so, he is able to test the extent to which proposed first principles or definitions of an entity are able to facilitate an explanatory demonstration of the characteristic phenomena associated with that entity.

By applying these scientific criteria to his predecessors' psychological principles, I claimed, Aristotle is, on the one hand, able to overturn some of their first principles outright. Sometimes he does this by revealing these principles to be inconsistent with the principles established in his works on natural science; other times he does this by showing that these principles are unable to explain the characteristic phenomena of soul. On the other hand, by means of this scientific inquiry, Aristotle is also able to modify certain other predecessor principles for use in his own developing psychology.

Here then is a summary of the advances that I have argued that Aristotle makes in *DA* 1, in respect of the predecessors I have discussed, which help to justify Aristotle's adoption of the Hylomorphic Definition of Soul, the Hylomorphic Causality Thesis, and ancillary theses related to these doctrines.

In respect of the soul's *motive abilities*, the results of Aristotle's critique of Plato seem to leave him with no choice but to begin to travel the path towards identifying the soul as the formal nature *of* a living body – in the sense of its inner principle of the motion and rest – rather than as itself a material or elemental body (*pneuma*, for example) resident in that body.⁴⁹⁰ (Indeed, if the soul did turn out to be an elemental body, it would imply that soul is a stuff which has its own inner principle of motion and rest which would need to be accounted for).

The results of his critique of the harmony theory lead Aristotle further down the path of identifying the soul as a formal and efficient cause of the body's motions and changes *qua* ensouled. In this critique, Aristotle shows that the capacities of the soul can neither be scientifically deduced from known elemental qualities in any harmonised state, nor can they be deduced from known harmonised bodily

⁴⁹⁰ In agreement with Johansen (2008).

compositions. This critique is based, I have suggested, on Aristotle's belief that the mathematical aspects of bodies and their mixtures (such as ratios) – even if they are rightly classed as formal causes – cannot be identified with soul, because such mathematical aspects cannot act, as the phenomenon of animal motion requires, as *efficient* causes. Further progress down the path towards identifying soul as a formal substance of the body is made when Aristotle points out that the activity and essence of the body's parts (flesh, for example) seems to depend upon the presence of the soul, but the presence of the soul also seems to depend upon the essence of the body's parts. This prepares the way for the idea that the essence of both soul and body are intertwined with one another, even whilst being distinct, as the Hylomorphic Definition of Soul will confirm.

Aristotle's critique of the harmony theory also allows him to make further progress towards establishing the Hylomorphic Causality Thesis in respect of the idea that the soul is a *final cause* of the body. Aristotle strongly suggests that if the soul is identified with a formal feature of *structured* bodies, as the harmony theorists hold, it will also need to be identified as a *final cause*, since it is only bodies organised in a certain way which have soul, and the elements do not seem to become mixed 'by chance', as Empedocles thought.

In respect of the soul's *cognitive abilities*, Aristotle argues that Empedocles' elemental account of the soul's cognition, which relies upon the cognitive principle that Like Cognises Like, is neither sufficient to account for the range of the objects we can cognise, nor sufficient to explain how we come to be affected by the objects of perception. Aristotle instead thinks that this principle needs to be modified so that the soul's ability to cognise can be understood as (a) modal in nature, such that soul has

the *potential* to be affected by ‘unlike’ cognitive objects, and (b) formal in nature, such that soul will be receptive of the forms of things, rather than their material stuffs.

In respect of *ancillary theses* concerning hylomorphic psychology, in his critique of the uniformity of the soul, Aristotle makes an advance towards showing that the first principle(s) of soul will need to be able to account for the non-uniformity of soul phenomena in nature. In particular, Aristotle shows that the predecessors, who are represented as having postulated their first principles in order to explain the soul’s power of producing motion, or perception, or both, are neither able to account for the non-uniform distribution of these psychological phenomena in nature, nor are they able to account for other phenomena associated with life, such as the phenomenon of growth. These observations seem to leave no other option for Aristotle than to affirm that, even granted the correctness of the Hylomorphic Definition of Soul, there will be different species of soul that will need to be investigated in terms of the different capacities they manifest in different genera or species of living beings in nature.

Finally, in his nuanced and difficult critique of the Academic thesis that the soul is spatially divisible into parts within the body, Aristotle takes a further step towards the idea that the structure of soul must be form-like, insofar as its ‘parts’ are shown to be incapable of being spatially separated from one another. However, in taking this step, Aristotle also shows the soul cannot continue to perform its characteristic life functions if a living body loses the organs or instruments which support its nature. This suggests not only that soul *is* this nature, but also, that the body is the instrument of the soul. These arguments, however, lead Aristotle on a path towards even more complex hylomorphic principles, such as a how many parts the soul has, and whether or not the principle that soul is only spatially divisible *per accidens* (into whole souls) applies to every kind of soul.

As I stated in the *Introduction to the Study*, these discussions do not exhaust the contribution that Aristotle's critique of his predecessors makes to the justification of the Hylomorphic Definition of Soul, and the Hylomorphic Causality Thesis. However, I hope to have at least shown that none of Aristotle's criticisms *presuppose* any of the hylomorphic psychological doctrines that Aristotle advances in *DA* 2-3, which is precisely why they are so interesting. Rather, I have tried to show that Aristotle's method of scientific inquiry works by demonstrating – within the framework of Aristotle's natural science – what can be explained, or not explained, by supposing his predecessors' first principles to be true. By showing where these principles fall short, I have claimed, Aristotle is constrained to follow a particular path which, whilst being harmony with the general principles of his hylomorphic natural science, is clearly influenced by both the advances and the failures of his predecessors. This path results in the idea that, amongst the first principles of soul on offer, ἐντελέχεια, in the sense of a formal, final, and efficient cause, is the most viable one.

Bibliography

Primary Texts and Translations

Aristotle

- Aristotle. (1833). *Aristotelis De Anima libri tres*, ed. F. Trendelenburg. Ienae: Sumtibus Walzii.
- _____. (1884). *Aristotelis ethica Eudemia*, ed. F. Susemihl. Leipzig: Teubner.
- _____. (1894). *Aristotelis ethica Nicomachea*, ed. I. Bywater. Oxford: Oxford University Press.
- _____. (1913). *Aristotelis de animalium motione et de animalium incessu. Ps.-Aristotelis de spiritu libellus*. Leipzig: Teubner.
- _____. (1919). *Aristotelis meteorologicorum libri quattuor*, ed. F. Fobes. Cambridge, Mass: Harvard University Press.
- _____. (1931). *Problemata*, in *Aristotelis opera*, vol. 2, ed. I. Bekker. Berlin: Reimer.
- _____. (1935) *Magna Moralia*, in *Aristotle*, vol. 18, ed. G. Armstrong. Cambridge, Mass: Harvard University Press.
- _____. (1949). *Aristotelis categoriae et liber de interpretatione*, ed. L. Minio-Paluello, L. (Oxford, Clarendon Press).
- _____. (1956). *Aristotelis Physica*, ed. W.D. Ross. Oxford: Oxford University Press.
- _____. (1956). *Aristote. Les parties des animaux*, ed. P. Louis. Paris : Les Belles Lettres.
- _____. (1957). *Aristotelis politica*, ed. W.D. Ross. Oxford: Clarendon Press.
- _____. (1957). *Aristotelis Metaphysica*, ed. W. Jaeger. Oxford: Oxford University

- Press.
- _____. (1958). *Aristotelis topica et sophisticæ Elenchi*, ed. W.D. Ross. Oxford: Clarendon Press.
- _____. (1959). *Aristotelis ars rhetorica*, ed. W.D. Ross. Oxford: Clarendon Press.
- _____. (1964). *Aristotelis Analytica Priora et Posteriora*, ed. W.D. Ross Oxford: Oxford University Press.
- _____. (1964-1969). *Aristote. Histoire des animaux*, Vols. 1-3, ed. P. Louis. Paris: Les Belles Lettres.
- _____. (1965). *Aristote. Du ciel*, ed. P. Moraux. Paris : Les Belles Lettres.
- _____. (1965). *Aristotelis de arte poetica liber*, ed. R. Kassel. Oxford: Clarendon Press.
- _____. (1965). *Aristotelis de generatione animalium*, ed. H.J. Drossaart Lulofs. Oxford: Clarendon Press.
- _____. (1967). *Aristotelis De Anima*, ed. W.D Ross. Oxford: Oxford University Press.
- Ackrill, J. (1963). *Aristotle's Categories and De Interpretatione*. Oxford: Oxford University Press.
- Barnes, J. (1984). *The Complete Works of Aristotle*. Princeton: Princeton University Press.
- Barnes, J. (1994). *Posterior Analytics*. Oxford: Clarendon Press.
- Hamlyn, D. (2002). *Aristotle De Anima: Books II and II (With Passages from Book I)*, Oxford: Clarendon Press.
- Hett, W. (1986). *Aristotle: On the Soul, Parva Naturalia, On Breath* (Loeb Classical Library). Cambridge, Mass: Harvard University Press.
- Hicks, R. (1907). *Aristotle De Anima*. Cambridge: Cambridge University Press.
- Joachim, H. (1922). *Aristotle on Coming-To-Be and Passing-Away*. Oxford:

- Clarendon Press.
- Lee, E. (1962). *Meteorologica* (Loeb Classical Library) Cambridge, Mass: Harvard University Press.
- Peck, A. (1937). *De Partibus Animalium* (Loeb Classical Library) Cambridge, Mass: Harvard University Press.
- Rodier, G. (1900). *Aristote, Traité de l'ame*, 2 Vols. Paris: Ernest Leroux.
- Ross, W. (1924). *Aristotle's Metaphysics: A Revised Text with Introduction and Commentary*, 2 Vols. Oxford: Clarendon Press.
- Ross, W. (1936). *Aristotle's Physics: A Revised Text with Introduction and Commentary*. Oxford: Oxford University Press.
- Ross, W. (1949). *Aristotle's Prior and Posterior Analytics*. Oxford: Clarendon Press.
- Ross, W. (1955). *Aristotle: Parva naturalia: A Revised Text with Introduction and Commentary*, ed. W.D. Ross. Oxford: Clarendon Press.
- Ross, W. (1961). *Aristotle De Anima: Edited, with Introduction and Commentary*. Oxford: Oxford University Press.
- Smith, J. (1931). *De Anima*, trans. J. Smith, in *The Works of Aristotle*, vol. 3, ed. W.D. Ross. Oxford: Oxford University Press.
- Torstrik, A. (1863). *Aristotelis De Anima Libri III*. Berolini: apud Weidmannos.
- Tricot, J. (2010). *Aristote: De l'âme*. Paris: Vrin.
- Wallace, E. (1882). *Aristotle's Psychology*. Cambridge: Cambridge University Press.
- Wicksteed, P., and Cornford, F. (1929). *Physics: Books I-IV* (Loeb Classical Library). Cambridge, Mass: Harvard University Press.
- Wicksteed, P., and Cornford, F. (1935). *Physics: Books V-VIII* (Loeb Classical Library) Cambridge, Mass: Harvard University Press.

Plato

- Plato. (1900). *Platonis Opera* I, ed. J. Burnet. Oxford: Clarendon Press.
- _____. (1901) *Platonis Opera* II, ed. J. Burnet. Oxford: Clarendon Press.
- _____. (1903) *Platonis Opera* III, ed. J. Burnet. Oxford: Clarendon Press.
- _____. (1968). *Platonis Opera* IV, ed. J. Burnet. Oxford: Clarendon Press.
- _____. (1967). *Platonis Opera* V, ed. J. Burnet. Oxford: Clarendon Press.
- _____. (1997). *Plato: Complete Works*, ed. J. Cooper. Indianapolis: Hackett.

Other Ancient and Medieval Authors and Collections

- Aeschylus. (1955). *Septem Quae Supersunt Tragoedias*, ed. D. Page. Oxford: Oxford University Press.
- Alexander of Aphrodisias. (1887). *De anima*, ed. I. Bruns. Commentaria in Aristotelem Graeca, Vol. II.1. Berlin: Reimer.
- _____. (1887). *De anima libri mantissa*, ed. I. Bruns. Commentaria in Aristotelem Graeca, Vol. II.1. Berlin: Reimer.
- _____. (2004). *Supplement to 'On the Soul'*, trans. R. Sharples. London: Duckworth.
- _____. (2012). *On the Soul Part I: Soul as Form of the Body, Parts of the Soul, Nourishment, and Perception*, trans. V. Caston. London: Bristol Classical Press.
- Aquinas, T. (1959). *In Aristotelis librum de Anima commentarium*, ed. M. Pirotta. Taurini: Marietti.
- Diels, H. (1879). *Doxographi Graeci*. Berlin: Reimer.
- Diels, H. (1951). *Die Fragmente der Vorsokratiker*, 6th edition, revised by Walter Kranz, 3 Vols. (6th edn). Berlin: Weidmann.

- Euripides. (1984). *Euripides Fabulae*, Vol. 1, ed. J. Diggle. Oxford: Oxford University Press.
- Graham, D. (2010). *The Texts of Early Greek Philosophy: The Complete Fragments and Selected Testimonies of the Major Presocratics*, 2 Vols. Cambridge: Cambridge University Press.
- Herodotus. (1958). *Historiae*, ed. C. Hude. Oxford: Oxford University Press.
- Homer. (1920) *Homeri Opera*, 5 Vols. Oxford: Oxford University Press.
- Ockham, W. (1991). *Quodlibetal Questions*, trans. A. Feddoso and F. Kelly. New Haven: Yale University Press.
- Philoponus. (1897). *In Aristotelis de Anima libros commentaria*, ed M. Hayduck. Commentaria in Aristotelem Graeca Vol. XV. Berlin: G. Reimer.
- _____. (1897). *In Aristotelis libros de generatione et corruptione commentaria*, ed. H. Vitelli, Commentaria in Aristotelem Graeca Vol. XIV. Berlin: G. Reimer.
- _____. (2005). *On Aristotle's 'On the Soul 1.1-2'*, trans. P. van der Eijk. Ithaca: Cornell University Press.
- _____. (2006). *On Aristotle's 'On the Soul 1.3-5'*, trans. P. Van der Eijk. Ithaca: Cornell University Press.
- Simplicius. (1882). *In libros Aristotelis de Anima commentaria*, ed. M. Hayduck. Commentaria in Aristotelem Graeca Vol. XI. Berlin: G. Reimer.
- _____. (1995). *On Aristotle's on the Soul 1.1-2.4*, trans. J. Urmson. Ithaca: Cornell University Press.
- Sophonias. (1897). *In Aristotelis De Anima*, ed. M. Haduck. Commentaria in Aristotelem Graeca, Vol. XXIII, Part I. Berlin: G. Reimer.
- Themistius. (1899). *In Aristotelis de Anima*, ed. R. Heinze. Commentaria in Aristotelem Graeca Vol. V. Berlin: G Reimer.

_____. (1996). *On Aristotle on the Soul*, trans. R. Todd. London: Duckwork.

Theophrastus (1897). *De sensu et sensibilibus*, in Diels (1897)

Secondary Texts

Ackrill, J. (1972/73). 'Aristotle's Definitions of *Psuche*'. *Proceedings of the Aristotelian Society*, 73:119-133.

_____. (1981). 'Aristotle's Theory of Definition: Some Questions on *Posterior Analytics* II 8-10', in Berti (1981).

Annas, J. (1974). 'Forms and First Principles'. *Phronesis* 19:257-283.

Barker, A. (1988). 'Aristotle on Perception and Ratios'. *Phronesis* 26:248-266.

_____. (2007). *The Science of Harmonics in Classical Greece*. Cambridge: Cambridge University Press.

Barnes, J. (1972). 'Aristotle's Concept of Mind.' *Proceedings of the Aristotelian Society* 72:101-114.

_____. (1982). *The Presocratic Philosophers*. London: Routledge.

Bastit, M. (1996). 'Qu'est-ce qu'une Partie de l'Âme pour Aristote?', in Viano (1996).

Beare, J. (1906). *Greek Theories of Elementary Cognition: From Alcmaeon to Aristotle*. Oxford: Clarendon Press.

Bennett, M., and Hacker, P. (2003). *Philosophical Foundations of Neuroscience*. Oxford: Blackwell.

Berryman, S. (2002). Aristotle on *Pneuma* and Animal Self-Motion. *Oxford Studies in Ancient Philosophy* 23:85-97.

Berti, E. (1981). *Aristotle on Science: Proceedings of the Eighth Symposium Aristotelicum*. Padua: Editrice Antenore.

- Betegh, G. (2009). 'The Limits of the Soul: Heraclitus B45 DK. Its Text and Interpretation', in E. Hülsz (2009).
- Bogen, J. (1996). 'Fire in the Belly: Aristotelian Elements, Organisms, and Chemical Compounds, in Lewis and Bolton (1996).
- Bolton, R. (1987). 'Definition and Scientific Method in Aristotle's *Posterior Analytics* and *Generation of Animals*', in Gotthelf and Lennox (1987).
- _____. (1991). 'Aristotle's Method in Natural Science: *Physics* I', in Judson (1991).
- Bonitz, H. (1955). *Index Aristotelicus*, ed. Jürgen Bona Meyer. Graz: Akademische Druck-U. Verlagsanstalt.
- Bos, A. (2007). 'Aristotle on Dissection of Plants and Animals and his Concept of the Instrumental Soul-Body'. *Ancient Philosophy* 27:95-106.
- Bostock, D. (1994). *Aristotle's Metaphysics: Books Z and H*. Oxford: Clarendon Press.
- Bradshaw, D. (1997). 'Aristotle on Perception: The Dual-Logos Theory'. *Apeiron* 30:143-161.
- Burnyeat, M. (1981). 'Aristotle on Understanding Knowledge', in Berti (1981).
- _____. (1992a). 'Is an Aristotelian Philosophy of Mind Still Credible? A Draft', in Nussbaum and Rorty (1992).
- _____. (1992b). 'How Much Happens When Aristotle Sees Red and Hears Middle C? Remarks on *De Anima* 2.7-8', in Nussbaum and Rorty (1992).
- _____. (2002). 'De Anima ii.5'. *Phronesis* 47:28-90.
- _____. (2008). *Aristotle's Divine Intellect*. Milwaukee: Marquette University Press.
- Bywater, I. (1888). 'Aristotelia III'. *The Journal of Philology* 17:53-74.
- Caston, V. (1997). 'Epiphenomenalisms, Ancient and Modern'. *The Philosophical Review* 106: 309–363.

- _____. (2005). 'The Spirit and the Letter: Aristotle on Perception', in Salles (2005).
- Charles, D. (2002). *Aristotle on Meaning and Essence*. Oxford: Oxford University Press.
- _____. (2008). 'Aristotle's Psychological Theory'. *Proceedings of the Boston Area Colloquium in Ancient Philosophy* 24:1–29.
- _____. (2009) 'Aristotle on Desire and Action', in Frede and Burkhardt (2009).
- Charlton, W. (1985). 'Aristotle and the *Harmonia* Theory', in Gotthelf (1985).
- Cherniss, H. (1935). *Aristotle's Criticism of Presocratic Philosophy*. Baltimore: Johns Hopkins Press.
- _____. (1962). *Aristotle's Criticism of Plato and the Academy*. Baltimore: Johns Hopkins Press.
- Chiba, K. (2012). 'Aristotle on Heuristic Inquiry and Demonstration of What it is', in Shields (2012).
- Code, A. (1987). 'Soul as Efficient Cause in Aristotle's Embryology'. *Philosophical Topics* 15: 51-59.
- Corcilius, K., and Gregoric, P. (2010) 'Separability vs. Difference: Parts and Capacities of the Soul in Aristotle'. *Oxford Studies in Ancient Philosophy* 39:81-120.
- Cornford, F. (1922). 'Mysticism and Science in the Pythagorean Tradition'. *The Classical Quarterly*, 16:137-150.
- Crane, T. and Patterson, S. (2000). *The History of the Mind Body Problem*. London: Routledge.
- Curd, P. and Graham, D.W. *The Oxford Handbook of Presocratic Philosophy*. Oxford: Oxford University Press.

- Distelzweig, P. (2013). 'The Intersection of the Mathematical and Natural Sciences: The Subordinate Sciences in Aristotle'. *Apeiron* 46:85-105.
- Evans, J. (1977). *Aristotle's Concept of Dialectic*. Cambridge: Cambridge University Press.
- Ferejohn, M. (1988). 'Meno's Paradox and *De Re* Knowledge in Aristotle's Theory of Demonstration'. *History of Philosophy Quarterly* 5:99-17.
- _____. (1991). *The Origins of Aristotelian Science*. Yale: Yale University Press.
- Feser, E. (2013). *Aristotle on Method and Metaphysics*. Basingstoke: Palgrave Macmillan.
- Frede, D. (1992). 'The Cognitive Role of *Phantasia* in Aristotle', in Nussbaum and Rorty (1992).
- Frede, D. and Burkhardt, R. (2009). *Body and Soul in Ancient Philosophy*. Berlin: Walter de Gruyter.
- Frede, M. (1996). 'On Aristotle's Conception of the Soul', in Nussbaum and Rorty (1992).
- Freeland, C. (1990). 'Scientific Explanation and Empirical Data in Aristotle's *Meteorology*'. *Oxford Studies in Ancient Philosophy* 8:67-102.
- Furley, D. (1994). 'Self Movers', in Gill (1994).
- Gill, M. (1991). 'Self-Motion', in Judson (1991).
- _____. (1994). *Self-Motion: From Aristotle to Newton*. Princeton: Princeton University Press.
- Gill, M. and Pellegrin, P. (2006) *A Companion to Ancient Philosophy*. Oxford: Blackwell.
- Goldin, O. (1996). *Explaining an Eclipse: Aristotle's Posterior Analytics 2.1-10*. Ann Arbor: University of Michigan Press.

- Gotthelf, A. (1985). *Aristotle on Nature and Living Things: Philosophical and Historical Studies*. Pittsburgh: Mathesis Publications Inc.
- _____. (1987). 'First Principles in Aristotle's *Parts of Animals*', in Gotthelf and Lennox (1987).
- _____. (1989). 'Teleology and Spontaneous Generation in Aristotle: A Discussion'. *Apeiron* 22:181-193.
- Gotthelf, A., and Lennox, J. (1987). *Philosophical Issues in Aristotle's Biology*. Cambridge: Cambridge University Press.
- Gottschalk, H. (1971). 'Soul as Attunement'. *Phronesis* 16:179-198.
- Granger, H. (1995). 'Aristotle on the Subjecthood of Form', *Oxford Studies in Ancient Philosophy* 13:135-60.
- _____. (1995a) 'The Subjecthood of Form: A Reply to Shields' *Oxford Studies in Ancient Philosophy* 13:177-185.
- Guthrie, W. (1962-1981). *A History of Greek Philosophy*, 6 Vols. Cambridge: Cambridge University Press.
- Hankinson, R. (1998). *Cause and Explanation in Ancient Greek Thought*. Oxford: Clarendon Press.
- Haslanger, S. (1994). 'Parts, Compounds, and Substantial Unity', in Scaltsas, Charles, and Gill (1994).
- Huby, P. (1962). 'The Date of Aristotle's *Topics* and Its Treatment of the Theory of Ideas'. *The Classical Quarterly* 12:72-80.
- Hülsz, E. (2007). *Nuevos essays sobre Heráclito*. Mexico City.
- Hussey, E. (1991). 'Aristotle's Mathematical Physics: A Reconstruction', in Judson (1991).
- _____. (2012). 'Aristotle on Earlier Natural Science', in Shields (2012).

- Ierodiakonou, K. (2005). 'Empedocles on Colour and Colour Vision'. *Oxford Studies in Ancient Philosophy*, 29:1-37.
- Ilievski, P. (1993). 'The Origin and Semantic Development of the Term Harmony'. *Illinois Classical Studies* 18:19-29.
- Irwin, T. (1987). 'Ways to First Principles: Aristotle's Methods of Discovery'. *Philosophical Topics* 15:109-34.
- _____. (1988). *Aristotle's First Principles*. Oxford: Clarendon Press.
- Jaeger, W. (1934). *Aristotle: Fundamentals of the History of His Development*, trans. R. Robinson. Oxford: Oxford University Press.
- Johansen, T. (1997). *Aristotle on the Sense-Organs*. Cambridge: Cambridge University Press.
- _____. (2008). 'Soul as an Inner Principle of Change: The Basis of Aristotle's Psychological Naturalism' in Scott (2008).
- _____. (2012). *The Powers of Aristotle's Soul*. Oxford: Oxford University Press.
- Judson, L. (1991). *Aristotle's Physics: A Collection of Essays*. Oxford: Clarendon Press.
- _____. (2005). 'Aristotelian Teleology'. *Oxford Studies in Ancient Philosophy* 29:341-66.
- Kahn, C. (1960). 'Religion and Natural Philosophy in Empedocles' Doctrine of the Soul'. *Archiv für Geschichte der Philosophie* 42:3-35.
- _____. (1992). 'Aristotle on Thinking', in Nussbaum and Rorty (1992).
- Kamtekar, R. (2009). 'Knowing by Likeness in Empedocles'. *Phronesis* 54:215-238.
- Kelsey, S. (2003). 'Aristotle's Definition of Nature'. *Oxford Studies in Ancient Philosophy* 25: 59-87.
- _____. (2010). 'Hylomorphism in Aristotle's *Physics*'. *Ancient Philosophy* 30:107-

- Kirk, G., Raven, J., and Schofield, M. (1983). *The Presocratic Philosophers*.
Cambridge: Cambridge University Press.
- Laks, A. (1999). 'Soul, Sensation, and Thought', in Long (1999).
- Laks, A. and Rashed, M. (2004) *Aristote et le mouvement des animaux*. Lille: Presses
Universitaires Du Septentrion.
- Landor, B. (1981). 'Aristotle on Demonstrating Essence'. *Apeiron* 19:116-32.
- Langton, R. (2000). 'The Musical, the Magical and the Mathematical Soul', in Crane
and Patterson (2000).
- Lennox, J. (1982). 'Teleology, Chance, and Aristotle's Theory of Spontaneous
Generation'. *Journal of the History of Philosophy* 20:219-38.
- _____. (1987). 'Divide and Explain: the *Posterior Analytics* in Practice', in Gotthelf
and Lennox (1987).
- _____. (1994). 'Putting Philosophy of Science to the Test: The Case of Aristotle's
Biology'. *PSA: Proceedings of the Biennial Meeting of the Philosophy of Science
Association*, Volume 2:239-247.
- Leunissen, M. (2010) 'Aristotle's Syllogistic Model of Knowledge and the
Biological Sciences: Demonstrating Natural Processes'. *Apeiron* 43:31-60.
- Levine, J. (1983). 'Materialism and Qualia: The Explanatory Divide.' *Pacific
Philosophical Quarterly* 64:357–358.
- Lewis, F. and Bolton, R. (1996). *Form, Matter, and Mixture in Aristotle*. Oxford:
Blackwell.
- Lloyd, G. (1966). *Polarity and Analogy*. Cambridge: Cambridge University
Press.
- Long, A. (1966). 'Thinking and Sense-perception in Empedocles: Mysticism or

- Materialism?' *Classical Quarterly* 16: 256-76.
- _____. (1999). *The Cambridge Companion to Early Greek Philosophy*. Cambridge: Cambridge University Press.
- Manning, G. (2013). 'The History of Hylomorphism'. *Journal of the History of Ideas* 74:173-187.
- Mansion, S. (1961). *Aristote et les problèmes de méthode*. Paris : Louvain.
- _____. (1961a). 'Le role de d'exposé et de la critique des philosophies antérieures chez Aristote', in Mansion (1961).
- Maudlin, T. (1986). 'De Anima III 1: Is Any Sense Missing?' *Phronesis* 31:51–67.
- McPherran, M. (2010). *Plato's Republic: A Critical Guide*. Cambridge: Cambridge University Press.
- McGinn, C. (1989). 'Can We Solve the Mind-Body Problem?' *Mind* 98:349–366.
- McKirahan, R. (1992). *Principles and Proofs: Aristotle's Theory of Demonstrative Science*. Princeton: Princeton University Press.
- Menn, S. (1992). 'Aristotle and Plato on God as *Nous* and as the Good'. *The Review of Metaphysics* 45:543-573.
- _____. (2002). 'Aristotle's Definition of the Soul and the Programme of the *De Anima*'. *Oxford Studies in Ancient Philosophy*, 12:83-139.
- Meyer, S. (1994). 'Self-Movement and External Causation', in Gill (1994).
- Miller, F. (2012). 'Aristotle on the Separability of Mind', in Shields (2012).
- Morison, B. (2004). 'Self-motion in *Physics* VIII', in Laks and Rashed (2004).
- Mourelatos, A. (2006). 'The Concept of the Universal in Some Later Pre-Platonic Cosmologists', in Gill and Pellegrin (2006).
- Nussbaum, M. (1982). 'Saving Aristotle's Appearances', in Nussbaum and Schofield

- (1982).
- _____. (1984). 'Aristotelian Dualism: Reply to Howard Robinson', *Oxford Studies in Ancient Philosophy* 2:197-207.
- Nussbaum, M., and Schofield, M. (1982). *Language and Logos: Studies in Ancient Greek Philosophy Presented to G.E.L. Owen*. Cambridge: Cambridge University Press.
- Nussbaum, M., and Rorty, A. (1992). *Essays on Aristotle's De Anima*. Oxford: Clarendon Press.
- Owen, G. (1961) 'Tithenai ta Phainomena', in Mansion (1961).
- _____. (1968). *Aristotle on Dialectic: The Topics (Proceedings of the Third Symposium Aristotelicum)*. Oxford: Clarendon Press.
- _____. (1968a). 'Dialectic and Eristic in the Treatment of the Forms', in Owen (1968).
- _____. (1986). *Logic, Science, and Dialectic*. London: Duckworth.
- _____. (1986b). 'Method, Physics, and Cosmology', in Owen (1986).
- Peramatzis, M. (2011). *Priority in Aristotle's Metaphysics*. Oxford: University of Oxford.
- Polansky, R. (2007). *Aristotle's De Anima*. Cambridge: Cambridge University Press.
- Primavesi, O. (2005). 'Empedocles: Physical and Mythical Divinity', in P. Curd and D.W. Graham (2005).
- Reeve, C. (2012). 'Aristotle's Philosophical Method', in Shields (2012.)
- Scaltsas, T., Charles, D. and Gill, M. (1994). *Unity, Identity, and Explanation in Aristotle's Metaphysics*. Oxford: Clarendon Press.
- Schofield, M. (1991). 'Explanatory Projects in *Physics* 2.3 and 7', *Oxford Studies in Ancient Philosophy* (Supplementary Volume) 9:29-40.

- _____. (1992). 'Aristotle on Imagination', in Nussbaum and Rorty (1992).
- Scott, D. (2008). *Maieusis. Essays in Ancient Philosophy in Honour of Myles Burnyeat*. Oxford: Oxford University Press.
- Sedley, D. (2007). *Creationism and its Critics in Antiquity*. Los Angeles: University of California Press.
- Searle, J. (1997). *The Mystery of Consciousness*. New York: The New York Review of Books.
- Shields, C. (1988). 'Soul as Subject in Aristotle's *De Anima*'. *The Classical Quarterly* 38:140-149.
- _____. (1995). 'The Subjecthood of Souls and Other Forms: A Response to Granger'. *Oxford Studies in Ancient Philosophy*, 13:161-176.
- _____. (2002). *Order in Multiplicity: Homonymy in the Philosophy of Aristotle*. Oxford: Oxford University Press.
- _____. (2007). 'The Peculiar Motion of Aristotelian Souls.' *Proceedings of the Aristotelian Society*, Supplementary Volume, 81:139-161.
- _____. (2010). 'Plato's Divided Soul', in McPherran (2010).
- _____. (2012). *The Oxford Handbook of Aristotle*. Oxford: Oxford University Press.
- _____. (2013). 'The Phenomenological Method in Aristotle's *Metaphysics*', in Feser (2013).
- Shorey, P. (1901). 'Aristotle's *De Anima*'. *The American Journal of Philology* 22:149-164.
- Silverman, A. (1989). 'Color and Color-Perception in Aristotle's *De Anima*'. *Ancient Philosophy* 9: 271-292.
- Smith, R. (1993). 'Aristotle on the Uses of Dialectic'. *Synthese*, 96: 335-358.
- Solmsen, F. (1960). *Aristotle's System of the Physical World: A Comparison with His*

- Predecessors*. Ithaca: Cornell University Press.
- Strawson, P. (2006). *Individuals: An Essay in Descriptive Metaphysics*. London: Routledge.
- Sauvé, S. (1987). 'Ummoved Movers, Form, and Matter'. *Philosophical Topics* 15:171-196.
- Tracy, T. (1982). 'The Soul/Boatman Analogy in Aristotle's *De anima*'. *Classical Philology* 77:97-112.
- Tweedale, M. (1990). 'Aristotle's Motionless Soul', *Dialogue* 29:123-132.
- Upton, T. (1985). 'The Role of Dialectic and Objections in Aristotelian Science'. *Southern Journal of Philosophy* 22:241-56.
- Viano, C. (1996) *Corps et âme. Sur le De Anima d'Aristote*. Paris: J. Vrin.
- _____. (1996a). 'La Doxographie du *De Anima* (I, 2-5) ou le Contre-modèle de l'Âme', in Viano (1996).
- Ward, J. (1988). 'Perception and Λόγος in *De Anima* II.12'. *Ancient Philosophy* 8:217-233.
- _____. (2008). *Aristotle on Homonymy: Dialectic and Science*. Cambridge: Cambridge University Press.
- Wardy, R. (1990). *The Chain of Change: A Study of Aristotle's Physics VII*. Cambridge University Press: Cambridge.
- Waterlow, S. (1998). *Nature, Change, and Agency in Aristotle's Physics*. Oxford: Oxford University Press.
- Whiting, J. (2002). 'Locomotive Soul: The Parts of Soul in Aristotle's Scientific Works', *Oxford Studies in Ancient Philosophy* 22:141–200.
- Williams, B. (1986). 'Hylomorphism'. *Oxford Studies in Ancient Philosophy* 4:189-199.

Witt, C. (1992). 'Dialectic, Motion, and Perception: *De Anima*, Book I', in Nussbaum and Rorty (1992).

Włodarczyk, M. (2000). 'Aristotelian Dialectic and the Discovery of Truth.'
Oxford Studies in Ancient Philosophy 18:153–210.