ARISTOTLE

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Aristotle

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Aristotle

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Abbreviations

Works of Aristotle are cited in the notes and in all textual references by their standard abbreviations. While most of Aristotle's works are referred to by their English titles, several retain their traditional Latin titles. I have followed this pattern in the text, since this is how Aristotle's readers will come upon his works in translation. In some cases, both English and Latin titles are current. In two cases (marked with an asterisk), for no easily ascertainable reason, no English title is used.

Below, I provide the standard abbreviations, followed by the Latin and English titles of his works:

APo	*Analytica Posteriora*	*Posterior Analytics*
APr	*Analytica Priora*	*Prior Analytics*
Cat.	*Categoriae*	*Categories*
DA	*De Anima*	*On the Soul*
DC	*De Caelo*	*On the Heavens*
De Interp.	*De Interpretatione*	*On Interpretation*
EE	*Ethica Eudemia*	*Eudemian Ethics*
EN	*Ethica Nicomachea*	*Nicomachean Ethics*
GA	*De Generatione Animalium*	*On the Generation of Animals*
GC	*De Generatione et Corruptione*	*On Generation and Corruption*
HA	*Historia Animalium*	*History of Animals*
IA	*De Incessu Animalium*	*Progression of Animals*
MA	*De Motu Animalium*	*On the Movement of Animals*
Met.	*Metaphysica*	*Metaphysics*
Metr.	*Meteorologica*	*Meteorology*
MM	*Magna Moralia*	**Great Ethics*
PA	*De Partibus Animalium*	*On the Parts of Animals*

Phys.	*Physica*	*Physics*
PN	*Parva Naturalia*	*Short Natural Treatises
Poet.	*De Arte Poetica*	*Poetics*
Pol.	*Politca*	*Politics*
Rhet.	*Rhetorica*	*Rhetoric*
Top.	*Topica*	*Topics*

Chronology

NB: Many of the dates given in this chronology are conjectural. On the status of our evidence regarding Aristotle's life and times, please see §1.1 and §1.3 below. All dates are BC.

384 Aristotle is born in Stagira, in Macedonia, in present-day northeastern Greece

367 Aristotle migrates to Athens in order to study in Plato's Academy, which was then widely regarded as the premier seat of learning in Greece

347 Plato dies and Speussippus ascends to the headship of the Academy; Aristotle leaves Athens for Assos, on the coast of present-day Turkey. During this period, Aristotle marries Pythias, a young relation of Hermeias, ruler of Assos, who is a friend and former associate of the Academy. Aristotle has a daughter, also called Pythias, with her

344 Hermeias is deposed; Aristotle relocates to nearby Mytilene, on the island of Lesbos; associates with Theophrastus, a native of that city and another former associate of the Academy

343 Philip, king of Macedonia, summons Aristotle to his homeland to tutor his son Alexander (later, the Great), who is then thirteen

335 Philip dies; Alexander becomes ruler of Macedonia; Aristotle returns to Athens and establishes his school, the Lyceum; during this period Pythias dies and Aristotle establishes a relationship, perhaps a marriage, with Herpyllis, also a native of Stagira, and has a son, Nicomachus, with her

323 After extending his conquests to Egypt, Syria, Persia and into India, Alexander the Great dies in India; in the face of rising anti-Macedonian sentiment, Aristotle withdraws from Athens for the final time

322 Aristotle dies in Chalcis

Introduction

This book should not read as a substitute for grappling with Aristotle's often challenging philosophical texts. Beyond the obvious thought that no such substitute exists lies the more consequential consideration, equally obvious to seasoned Aristotelians though perhaps less immediately recognizable to novices, that much of what I claim Aristotle maintains will have had its credentials as authentically Aristotelian queried by someone or other in the long tradition of Aristotelianism. With now two and a half millennia of minute engagement with Aristotle – in the form of exegesis and explication, of appropriation and appeal to authority, and also of criticism and contumely – almost nothing beyond the barest summary of his work is uncontroversial.

Neither should this book, accordingly, be regarded as a brief compendium of Aristotelian philosophy. It is not that I deny that there are correct and authoritative interpretations of key Aristotelian doctrines; nor indeed have I shied from offering my preferred readings when it has seemed serviceable to the task of this book. Yet it has not been my primary goal in this work to articulate or defend nuanced interpretations of individual Aristotelian doctrines, the appropriate vehicle for this sort of enterprise being rather the scholarly monograph or the professional journal. My chief objective has instead been to *motivate* the principal features of Aristotle's philosophy at least to the degree that it is necessary for his newest readers to approach his writings with facility and understanding: my abiding wish is that Aristotle's readers will make the necessary effort to determine for themselves what he means, what is of value in his philosophy, what should be accepted

as defensible, and what should be rejected as unsustainable. This book will have served its primary purpose if this aim is met, and those new to Aristotle have found themselves able to explore his works on their own, sufficiently equipped to make such a programme of inquiry intellectually profitable.

Given the objective, it has seemed sensible to adopt the following policies for this book.

First, I have tried to incorporate a fairly liberal number of passages, at least as many as are required for those approaching Aristotle for the first time to familiarize themselves with key texts pertinent to the issues targeted for discussion. When translating these passages, it has been necessary to confront some of the more rebarbative aspects of Aristotle's sometimes fierce and unwelcoming prose. In doing so, I have tried to keep the needs of Greekless English readers in mind, while simultaneously striving not to offend the demands of legitimate fidelity. (I discuss some features of Aristotle's prose in §1.4, 'Reading Aristotle'.) I have also incorporated a Glossary at the end of the book in which I cross-list alternative translations of the key terms students are likely to encounter in some of the most widely used contemporary English translations.

Second, after providing an overview of Aristotle's life and writings, I have spent a fair bit of time discussing and motivating two framework issues: (i) his four-causal account of explanatory adequacy (Chapter Two, 'Explaining Nature and the Nature of Explanation'); and (ii) his conception of the tools and methods required for successful philosophizing (Chapter Three: 'Thinking: Scientifically, Logically, Philosophically'). I do so in the belief that not much of Aristotle's substantive philosophizing can be understood or assessed without a prior mastery of these matters; indeed, Aristotle has had visited upon him unseemly forms of misrepresentation and hasty dismissal at the hands of those who have not made any serious effort first to understand the terms within which he advances his views. To take but one rather simple example, tedious in itself but prevalent nonetheless: it is commonplace to encounter strident rejections of aspects of Aristotle's teleology authored by those who have plainly never read what he has to say about this topic. Now, it may be that these very aspects of

Aristotle's teleology *should* be rejected – but if that is so, then they should be rejected *for the right reasons*. In any case, no-one rightly excoriates the views of another without first determining that the views in question are authentic and then also that they are worthy of rejection. It serves the interests of no-one to foist facile views upon Aristotle or any other great philosopher merely for the satisfaction of short-term self-promotion.

Consequently, in these two framework chapters I set out and motivate the terms within which Aristotle conducts much of his philosophy. Students who come to his work with a narrow interest in, for instance, his ethical or political theory would be advised first to familiarize themselves with at least these two chapters before turning to my discussions of his ethics and politics. For, as they will discover, his inquiries in these area are cast in the terms provided by his basic explanatory framework. Even then, I fear, if they have done only this much spade work, students will miss much of the force of these theories, since in them Aristotle draws freely upon the metaphysical and psychological doctrines he articulates and defends elsewhere in his corpus. It would thus be optimal to read the whole book as a continuous treatise, because later chapters freely draw upon earlier chapters. Although it is somewhat controversial, I accept the view – and presuppose in the current volume – that Aristotle is a highly systematic thinker, such that his views in one field cannot often be fully understood without frequent recourse to his views in another. That said, at least rudimentary misunderstanding can be staved off if students will review at least Chapters Two and Three before turning to Aristotle's more detailed, substantive discussions, as they are presented in Chapters Four through Ten. As an aid to study, I have tried to indicate, by means of reasonably full cross-references, discussions in the later chapters which draw upon specific topics treated in the earlier sections of the book.

Finally, I have ended each chapter with a list of Further Reading, broken into two sorts. First, and most importantly, I provide lists of primary texts within the corpus where Aristotle pursues the issues discussed. These lists of passages are not keyed to any one translation, but students would do well to favour

editions with translations written within the last forty years or so, since standards of accuracy have progressed in measurable ways over earlier periods. Similarly helpful are the welcome appearance of a variety of philosophically sophisticated commentaries, such as those found in the excellent Clarendon Aristotle Series (Oxford University Press), which should be the first port of call for students seeking rigorous philosophical engagement with Aristotelian texts. A list of translations and commentaries appears in the recommendations for further reading at the end of this Introduction.

I have also provided lists of other secondary sources, including in some cases alternative introductions to Aristotle, many of which complement the current volume because of their dissimilar approaches and contents. In general, I have emphasized works easily recommended for their clarity, significance, or accessibility. In making these recommendations, I have also made free use of internet resources, partly because the best among such sources, including especially the entries to Aristotle in the *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu/), contain dynamic bibliographies which can direct more advanced students as they move to the next level of study.

When such study is pursued, the current volume may be retired and safely set aside as having at that point satisfactorily discharged its primary function.

FURTHER READING

In addition to the more specific, topical recommendations given at the end of each chapter, the following are reliable general sources on Aristotle.

Translations

The standard English translation of Aristotle's complete works in English is:

Barnes, J. (ed.) *The Complete Works of Aristotle*, vols. I and II (Princeton University Press: 1984)

An excellent translation of selections of Aristotle's works is:

Irwin, T. and Fine, G., *Aristotle: Selections*, translated with introduction, notes, and glossary (Hackett: 1995)

Translations with Commentaries

The best set of English translations with commentaries is the Clarendon Aristotle Series. These works are intended for Greekless readers seeking sophisticated philosophical engagement with Aristotle's works. Currently available in the series:

Ackrill, J., *Categories and De Interpretatione*, translated with notes (Clarendon Press: 1963)

Annas, J., *Metaphysics Books M and N*, translated with a commentary (Clarendon Press: 1988)

Balme, D., *De Partibus Animalium I and De Generatione Animalium I (with passages from Book II. 1–3)*, translated with an introduction and notes (Clarendon Press: 1992)

Barnes, J., *Posterior Analytics*, second edition, translated with a commentary (Clarendon Press: 1994)

Bostock, D., *Metaphysics Books Z and H*, translated with a commentary (Clarendon Press: 1994)

Charlton, W., *Physics Books I and II*, translated with introduction, commentary, note on recent work, and revised bibliography (Clarendon Press: 1984)

Graham, D., *Physics, Book VIII*, translated with a commentary (Clarendon Press: 1999)

Hussey, E., *Physics Books III and IV*, translated with an introduction and notes (Clarendon Press: 1983)

Keyt, D., *Politics, Books V and VI Animals*, translated with a commentary (Clarendon Press: 1999)

Kirwan, C., *Metaphysics: Books gamma, delta, and epsilon*, second edition, translated with notes (Clarendon Press: 1993)

Kraut, R., *Politics Books VII and VIII*, translated with a commentary (Clarendon Press: 1998)

Lennox, J., *On the Parts of Animals*, translated with a commentary (Clarendon Press: 2002)

Madigan, A., *Aristotle: Metaphysics Books B and K 1–2*, translated with a commentary (Clarendon Press: 2000)

Makin, S., *Metaphysics Theta*, translated with an introduction and commentary (Clarendon Press: 2006)

Pakaluk, M., *Nicomachean Ethics, Books VIII and IX*, translated with a commentary (Clarendon Press: 1999)

Robinson, R., *Politics: Books III and IV*, translated with a commentary by Richard Robinson, with a supplementary essay by David Keyt (Clarendon Press: 1996)

Saunders, T., *Politics: Books I and II*, translated with a commentary (Clarendon Press: 1996)

Shields, Christopher, *De Anima*, translated with an introduction and commentary (Clarendon Press: 2007)

Smith, R., *Topics Books I and VIII*, with excerpts from related texts, translated with a commentary (Clarendon Press: 1997)

Taylor, C., *Nicomachean Ethics, Books II–IV*, translated with an introduction and commentary (Clarendon Press: 2006)

Williams, C., *De Generatione et Corruptione*, translated with a commentary (Clarendon Press: 1983)

Woods, M., *Eudemian Ethics Books I, II, and VIII*, second edition, edited, and translated with a commentary (Clarendon Press: 1992)

General Works

Comprehensive Introductions to Aristotle

These works have different sorts of virtues; all can be consulted with profit:

Concise and economical, as well as philosophically acute is:

Ackrill, J., *Aristotle the Philosopher* (Oxford University Press: 1981)

Important and agenda setting, though not introductory is:

Jaeger, W., *Aristotle: Fundamentals of the History of his Development* (Oxford University Press: 1934)

A standard and authoritative work which summarizes Aristotle's philosophy with minimal critical assessment is:

Ross, W. D., *Aristotle* (Methuen: 1923)

Lively and thematic rather than comprehensive, but philosophically engaging is:

Lear, J., *Aristotle: the Desire to Understand* (Cambridge University Press: 1988)

General Guide Books to Aristotle

Barnes, J., *The Cambridge Companion to Aristotle* (Cambridge University Press: 1995)
Anagnostopoulos, G., *The Blackwell Guide to Aristotle* (Blackwell: 2007)
Shields, C., *The Oxford Handbook on Aristotle* (Oxford University Press: 2007)

Online Resources

The Stanford Encyclopedia of Philosophy has a section on Aristotle, which, after a general introduction, is divided into two sub-sections. This resource is especially valuable in virtue of its dynamic bibliographies, which are updated on a regular basis.

1 General entry on Aristotle:
Shields, C., http://plato.stanford.edu/entries/aristotle/

2 General topics:
Biology: Lennox, J., http://plato.stanford.edu/entries/aristotle-biology/
Categories: Studtmann, P., http://plato.stanford.edu/entries/aristotle-categories/
Ethics: Kraut, R., http://plato.stanford.edu/entries/aristotle-ethics/
Logic: Smith, R., http://plato.stanford.edu/entries/aristotle-logic/
Metaphysics: Cohen, S., http://plato.stanford.edu/entries/aristotle-metaphysics
Political theory: Miller, F., http://plato.stanford.edu/entries/aristotle-politics/
Psychology: Shields, C., http://plato.stanford.edu/entries/aristotle-psychology
Rhetoric: Rapp, C., http://plato.stanford.edu/entries/aristotle-rhetoric

3 Special topics:
Causality: Falcon, A., http://plato.stanford.edu/entries/aristotle-causality/
Mathematics: Mendell, H., http://plato.stanford.edu/entries/aristotle-mathematics
Natural philosophy: Bodnar, I., http://plato.stanford.edu/entries/aristotle-natphil/

One

Aristotle: Life and Works

1.1 ARISTOTLE IN THE ANCIENT BIOGRAPHICAL TRADITION

Depending upon the ancient sources we prefer, Aristotle emerges to the modern era as a man with one or the other of two remarkably dissimilar profiles.[1] According to one tradition, presumably inaugurated and flamed primarily by his enemies, Aristotle was, if intellectually capable, a ghastly sort of man: obnoxious and disagreeable, conceited and overbearing. According to an equally well-attested and completely opposing tradition, Aristotle was, on the contrary, not only a genius beyond all measure, but a considerate soul, fervently devoted to his friends and passionately interested in the enhancement of human knowledge in all its forms. Armed with either one or the other of these assessments, it is possible to find corroborating evidence when combing through Aristotle's extant writings.[2] Although neither approach is likely to yield an accurate portrait of Aristotle, there is a methodological moral in surveying the excesses of each.

According to the first, scurrilous tradition – which does come down to us with an ancient pedigree – Aristotle arrived on the intellectual scene of Athens displaying the haughty character of genius: self-smitten, he was ever jealous of his reputation for intellectual pre-eminence and given to preening self-promotion.[3] Also an ingrate, he was, as an ancient biographer tells us, the 'foal who kicked his mother'.[4] The mother in question was Aristotle's teacher, Plato.

The derogatory approach paints an unflattering picture of Aristotle's relationship to Plato. Having been taken as a young

man into the bosom of Plato's Academy, once educated and acculturated, Aristotle turned upon his master and mocked him in the manner of a cocksure schoolboy too vain to appreciate that his very ability to ridicule had been gifted him by the teachers he now disdained. At his caustic worst, Aristotle ridicules and dismisses the towering achievement of Plato's philosophy, his theory of Forms: 'Farewell to the Forms: they are but ding-a-lings and even if they do exist they are wholly irrelevant' (*APo.* 83a32–34). Ever arch, Aristotle denigrates the thinkers who came before him as crude and intellectually infantile, even though he regularly fails, or refuses, to represent their views fairly and adequately. He credits them in a patronizing way only when he thinks he can see them groping inadequately towards his own theories and convictions. Otherwise, his predecessors come in for harsh treatment: 'Even the more recent among the older thinkers found themselves befuddled lest it turn out that according to them that the same thing should be at the same time both one and many' (*Phys.* 185b25–27). These thinkers, implies Aristotle, fell into a dither about parts and wholes, 'as if it were not possible for the same thing to be one and many' (*Phys.* 186a1–2). Here Aristotle contends that those who came before him somehow could not see that a single confection might be one cake *and* eight slices of cake, each ready to be eaten individually. How could they be so obtuse?

They could be so obtuse, our first tradition tells us, only because Aristotle used them sorely in an effort to prop up his own self-image by comparing travesties of their views disadvantageously to his own, the virtues of whose innovations he was keen to trumpet with immodest self-aggrandizement. Aristotle was ever alive to his own intellectual advances, and where he understood himself to have succeeded, he expected the credit he thought his due. Thus, for example, at the end of his work he had written on styles of argumentation, Aristotle proclaims:

> Once you have surveyed our work, if it seems to you that our system has developed adequately in comparison with other treatments arising from the tradition to date – bearing in mind how things were at the beginning of our inquiry – it falls to you, our

> students, to be indulgent with respect to any omissions in our system, and to feel a great debt of gratitude for the discoveries it contains.
>
> (*Soph. Ref.* 184b2–8)

What he had accomplished in this work, Aristotle's critics contend, was little more than a fragment of elementary logic, as might be taught today in the first weeks of an introductory course, followed by a series of recommendations for gaining the upper hand in contests of eristic.

In fact, still according to our first ancient tradition, when we think of Aristotle's self-conception, it is difficult not to suppose that he understands himself to be an instance of the sort of figure he idolizes as 'great-souled' (*megalapsuchos*) in his discussion of virtue in the *Nicomachean Ethics* (1123a34–1125a35). The virtue of being great-souled, if it is a virtue, requires having the sort of character trait Aristotle admires in the *megalapsuchos* – sometimes translated into English via its Latinate counterpart as the *magnanimous* man. This is at best a misleading translation, since the *megalapsuchos* is someone manifesting not greatness *of* soul, conceived in altruistic or other-regarding terms. The *megalapsuchos* has rather the conceit to understand himself as possessing a soul greater than all others, someone whose own superiority leads him to condescend to those he regards as inferior, even to the point of despising them when they endeavour to honour him:

> The great-souled man will be concerned most of all with honours and dishonours; and he will be moderately pleased with great honours given by good men, because he will think that he is being given his due – or perhaps less than his due, since there can be no honour worthy of perfect excellence. Nonetheless, he will accept them since they have nothing greater to bestow upon him; but he will be completely contemptuous of honour offered by just anyone or given on trifling grounds.
>
> (*EN* 1124a4–11)

This man, who comes equipped with a suitably deep baritone voice and who affects a measured gait, is Aristotle's very ideal (*EN*

1125a12). The crowing trait manifested by this great-souled man, claims Aristotle, is a 'sort of gilding of the virtues' (*EN* 1124a1–2). Already perfectly virtuous in all other respects, Aristotle's ideal man does not refrain from making his superior self-conception known. The man of pre-eminent human virtue, according to Aristotle, is evidently jealous of his social standing and haughty to the point of contemptuousness.

Who could tolerate such a man, let alone esteem him so openly and unapologetically as Aristotle? As the greatest Aristotelian of the twentieth century, Sir David Ross, observed, the arrogance on display in this passage 'betrays somewhat nakedly the self-absorption which is the bad side of Aristotle's ethics'.[5] It is unsurprising, then, that Aristotle's ancient biographers are replete with stories capturing his self-aggrandizing tendencies of character.[6]

Before we close the book on Aristotle, however, we should give a fair hearing to an equally well-attested and yet completely opposing biographical tradition. According to this second tradition – which again comes down to us with an ancient pedigree – Aristotle was, uncommonly for an indisputable genius, a fine and generous man, who despite his prodigious intellect evinced a natural humility and generous devotion to his friends. Although it is true that he could be critical of his teacher where he differed with him, Aristotle regarded Plato warmly and with deep and grateful affection. He characterized Plato as 'a man whom the wicked have no place to praise: he alone, unsurpassed among mortals, has shown clearly by his own life and by the pursuits of his writings that a man becomes happy and good simultaneously'.[7] Aristotle saw something fine in Plato, whom he honours not only for his intellectual ability, but also, and more tellingly, for his unmatched concord of mind and life. Plato is a paragon and a model to us all, contends Aristotle, because he demonstrates, in a way never surpassed if ever equalled, that human happiness resides in the attainment of high intellectual achievement.

This is why, when he comes to differ with him – as every truly great teacher hopes his best students will do, when it is warranted – Aristotle exhibits an affectionate restraint and a touching hesitance. For instance, when he expresses his difference with Plato

about the nature of goodness, as he does in an important chapter of his *Nicomachean Ethics*, Aristotle says:

> We had perhaps better consider the universal good and run through the puzzles concerning what is meant by it – even though this sort of investigation is unwelcome to us, because those who introduced the Forms are friends of ours. Yet presumably it would be the better course to destroy even what is close to us, as something necessary for preserving the truth – and all the more so, given that we are philosophers. For though we love them both, piety bids us to honour the truth before our friends.
>
> (*EN* 1096a11–16)

The philosophical difference between these two towering thinkers is both central and structural: Plato thinks that goodness is *univocal* – that all good things are ultimately good in precisely the same way, by instantiating the single Form Goodness – whereas Aristotle doubts that this is so. On the contrary, he assails Plato's univocity assumption, because he thinks that different things are good in irreducibly different ways: the goodness of Kathleen Ferrier's singing *Ombra ma fu* is not at all the same thing as the goodness of a crisp Cox's Orange Pippin apple in the autumn.

It is noteworthy that despite this deep philosophical disagreement, Aristotle does not ridicule Plato's opposing view. Instead, he pays Plato the respect which is his due by arguing carefully against him, and proceeds, as he intimates, only against his natural disinclination and because piety bids that we place our service to the truth before the feelings of even our dearest friends. Here, according to the champions of this second approach, we observe the true Aristotle: intellectually honest, yet affectionate, grateful, and pious as well.

We can further appreciate, according to the positive biographical tradition, how Aristotle's respect for Plato is equally reflected in his warm, almost reverential attitude towards friendship in general. It is plain that Aristotle values friendship exceedingly, even to the point where he is prepared to regard a friend as a 'second self' (*allos* or *heteros autos*; *EN* 1166a32; *EE* 1245a3). Your

true friend, maintains Aristotle, is someone whose well-being matters to you no less than your own. In a revealing passage of his *Nicomachean Ethics*, Aristotle observes:

> It is said that one ought to love most the friend who is most a friend; and he is most a friend who most of all wishes good things for a friend for his own sake, even if no-one will know about it. Yet these are attitudes which belong most of all to someone in reference to himself, as indeed do the remaining defining features by which a friend is defined. For we have said that features of friendship extend *from* oneself and *to* all others. Indeed, all the proverbs agree, in mentioning, for example, 'a single soul', or 'what is common to friends', or 'friendship as equality', or 'the knee is closer than the shin'. For all these are things which one bears in the first instance to oneself, since one is in the first instance a friend to oneself.
>
> (*EN* 1168b1–10; cf. *EE* 1240b3–31)

This remark occurs in a passage in which Aristotle is combating the view that all forms of self-love are base, in effect that all self-regard is ultimately rank selfishness. He disagrees, differentiating appropriate forms of self-regard from those which are venal or puerile. It is striking how readily he pairs the appropriate forms with the heightened love one has towards the dearest of friends. He even cites as a then popular saying with approbation: a friend is someone with whom one shares a single soul.

These are not the sentiments of a self-involved egoist. Rather, the Aristotle who emerges from this passage, and many others like it, is a man who values friendship as indispensable to human flourishing (see, e.g., *EN* 1169b17–19; *Pol.* 1262b12–14). In such contexts, he expresses a fine and noble sentiment, unashamedly proclaiming that it is necessary to value our friends in the way that we appropriately value ourselves. So much is neither haughty nor excessively self-occupied. On the contrary, Aristotle's remarks reflect the commitments of a man who loves and cherishes his own friends, and advises others to do the same, because he well understands the inestimable value of intimate association for human flourishing.[8]

One finds this same fine and gentle character coming to the fore in Aristotle's will, the only genuinely personal document from his pen that we possess. In this will, we find Aristotle freeing his slaves, an unnecessary and generous gesture for a man of his time, and also providing for the well-being of his children and his estate (Diogenes Laertius v 11–16). This, though, is what we might come to expect from a man whose primary preoccupation was the advancement of human learning and not self-promotion.

Indeed, if we read Aristotle closely, we find revealed in his writings not a genius who disparages the worth of others, but rather a biologically inclined investigator who saw beauty in life forms no matter how lowly. For example, Aristotle expressly rebuffs those who ridicule research into lower animals on the grounds that we should care little about vermin when we can turn our minds to the lofty:

> Having assayed the celestial world by saying how things in that domain appear to us, it remains for us to speak about animals and their nature, omitting nothing, whether or lowly not. For if the study of the lowly has nothing to charm the senses, that nature which fashioned them provides an irresistible pleasure in their study to all those able to detect the causes of things, those who are by nature disposed to philosophy. Indeed, it would be irrational and perverse if we were to delight in seeing representations of such things, because we discern at the same time the craft of painter or sculptor, but did not love still more a view of the originals as constituted by nature – again, at least as regards those able to observe their causes. We therefore must not recoil childishly from the examination of the baser animals: for in all strata of nature there is something marvelous. And as is reported regarding Heracleitus – that when some strangers hoping to visit with him found him warming himself by the kitchen stove hesitated and refrained from entering, he encouraged them to take heart and enter, on the grounds that even there in the kitchen the gods were present – so too should we embark on the study of every kind of animal without disdain, since in each of them there is something natural and beautiful. For in all the works of nature

> we find not happenstance but end-directedness to the highest degree, and the end for which those entities were put together and produced surely embrace the province of the beautifuls.
>
> (*PA* 645a5–36)

This passage, written in an elevated and flowing prose incongruous with what surrounds it in the biological work in which it occurs, the *Parts of Animals*, provides a window into Aristotle's emotively charged intellectual character: he loves study not least because he loves what he studies. Reading this sort of sentiment, it is hard to credit the cavils of Aristotle's ancient detractors. Probably we should simply admit what is plain: the negative remarks in the ancient biographical tradition surrounding Aristotle are mainly the views of his enemies, men driven by petty jealousy and competitive zeal rather than by a sober interest in neutral assessment.

1.2 ARISTOTLE'S CHARACTER

These two portraits, the first captious and the second fawning, reflect two genuine traditions surrounding Aristotle's life and character. Neither is likely to be fully apt, since each is decidedly exaggerated. Each has its ancient and modern champions; and neither will ever be fully credited, though each may safely be at least partially discredited.

Although the two traditions which have come down to us are doubtless overblown in their different directions, they do tend to intersect in a noteworthy manner at one common point: Aristotle was, on each account, a self-assured man of formidable intellectual powers. He was, undeniably and on all accounts, rapaciously engaged in all areas of human learning, indefatigably determined to expand and ennoble the power of the human intellect through research into what would now be an impossible variety of fields – and what was then, as a matter of comparison, a bewildering number of distinct enterprises. He prized intellectual endeavour, at times to the point of reverence, going so far as to characterize our mental life as the divine element within us (*EN* 1177b33–1178a32,

1179a18–30). If we permit this sort of remark to offer us a fleeting glimpse into his character, then we come to appreciate one facet of him about which all should agree: he loved learning.

Aristotle thought of human learning as natural, as good, and as precious. Indeed, he thought it part of the essence of humanity. He opens his great work, the *Metaphysics*, with the simple observation that 'All humans, by nature, desire to know' (*Meta*. i 1, 980a1). He thinks, then, controversially, first that humans have a single and unalterable nature, and surprisingly even for an essentialist, that this nature has a rather startling character: we are, at base, according to Aristotle, *knowledge seekers*. He does not say or think, as other theorists of human nature have thought and said, that it is the nature of human beings to be selfish, or dominating, or somehow narrowly self-interested. On the contrary, he thinks that all humans are so constituted that their dominant activity is knowledge acquisition.[9] Plainly, Aristotle understands his general view to apply to himself; the inference thus lies near that his general judgment rests partly in his own self-acquaintance. Aristotle was, in fact, enthusiastically, even zealously devoted to excellence in intellectual attainment.

Perhaps, then, accepting at face value the tenor of his extant work, we should avoid the ancient tradition whose primary goal has always been to disparage Aristotle. At the same time, we have no reason to indulge in Aristotelian hagiography. As dispassionate philosophical investigators, what we really want to know are not the facets of his character, which are in any case largely unrecoverable to us, but rather the value of his thought. What we wish to know, primarily, is this: what in his surviving writings is true and valuable; what has been superseded, by what and how; and what if anything remains instructive in such errors as he may have committed? If we approach his works armed with preconceptions about his character and personality, we will likely only find our partialities reflected there. We may read him believing that he is a great man, worthy of veneration, or that, on the contrary, he is an overrated idol with an overblown reputation sorely in need of deflation. Or we may rather simply read and evaluate his works for ourselves. We may, that is, do our best to approach Aristotle's

writings with fresh eyes, not expecting them to be true or false, magnificent or modest, relevant for our times or surpassed by the centuries.

We shall follow this last policy in this work and encourage others to follow suit.

1.3 THE FACTS OF ARISTOTLE'S LIFE

Although we have little independent basis for an assessment of Aristotle's character,[10] we do know some things about the course of his life. Even here, however, we cannot assume that our speculations are more than broadly accurate.

Aristotle was born in Stagira, in the northeast of what is now Greek Macedonia in 384 BC – hence the moniker applied to him through the ages, even down to the present day, The Stagirite. It will prove significant for Aristotle throughout the course of his life that he could not be known as The Athenian. (Of course, Aristotle would have had stiff competition for that nickname had he been born in Athens; indeed, notably, no-one is called *The* Athenian.) Because he was only an alien resident of Athens, Aristotle was compelled to contend with the consequences of his non-citizen status for most of his adult life, even to the point, it seems, of having his life endangered in a time of civic duress at the close of his last period in that city.

This, though, brings us too quickly to the end of his life. Details of his early life are sketchy, though reasonably well attested. His father, a physician named Nicomachus, died while Aristotle was still a boy. Evidently raised by an uncle named Proxenus, Aristotle was sent, or went, to Athens in 367, when he was seventeen. (Another, less credible account has him migrating to Athens a little over a decade later, in his early thirties.)[11] Apparently, he went to Athens for the express purpose of joining Plato's Academy, which was at the time widely regarded amongst Greeks as the pre-eminent centre of learning in the entire civilized world – in that is, all of Greece. Aristotle remained in the Academy for two decades, until Plato's death in 347, at which time he left Athens for Assos, on the coast of Asia Minor, in

present-day Turkey, a city then positioned somewhat insecurely in the outer reaches of the Greek world. Aristotle went to Assos in response to an invitation from Hermeias, a friend and former associate in the Academy, who though once a slave and also a eunuch had been freed and ascended to become ruler of that city.[12]

Speculations concerning the motives for Aristotle's departure from Athens range from the benign to the spiteful. When Plato died, his nephew Speusippus assumed the headship of the Academy. This cannot be explained by blatant nepotism, since Speusippus was a philosopher and mathematician of considerable talent. Perhaps, though, Aristotle was displeased by this turn of events, and, some suppose, because he was venal, he left when he was passed over for the headship. More probably he simply did not care for the increasingly mathematical direction the Academy was set to take under Speusippus. Independent of such possible internal considerations, there was also at the time a mild resurgence of an always-simmering anti-Macedonian sentiment in Athens. This too may have contributed to Aristotle's departure, if, as seems likely, he was a prudent man. No less likely, however, is the suggestion that Aristotle was not pushed but pulled: the Aegean Coast of Asia Minor would have proven an ideal setting for his burgeoning interests in marine biology. We cannot access his actual motives.

Whatever his motives for leaving Athens, Aristotle went to Assos and remained there for only three years. During that time, he married the niece or adopted daughter (or both) of Hermeias. She was named Pythias,[13] and with Aristotle she had a daughter, also named Pythias. After his three years there, probably because of the deposition of the tyrant Hermeias, Aristotle moved to the nearby island of Lesbos, to the town of Mytilene. While the move was perhaps in some ways significant, it was geographically inconsequential: Lesbos is sufficiently close to Assos that it can be seen from its acropolis. Once he arrived there, Aristotle carried on his researches with another refugee from the Academy, Theophrastus, who was a native of Mytelene. The two men forged a close working relationship, which lasted, at least intermittently, until Aristotle's death almost two decades later. It is likely that during his two or so years on Lesbos, Aristotle gave over a great

deal of his energy to marine biological investigation.

His activity on Lesbos was brought to an end when Aristotle was summoned home in 343 by Philip of Macedon to serve as a tutor to his son Alexander, soon to be the Great. Although it has proven irresistible to historians of all stripes to speculate about the interactions of this world historical pair, in fact we have no credible evidence regarding their contact with one another. It is, however, hard to lay too much praise or blame at Aristotle's feet for the subsequent course of Hellenistic history under Alexander. Whatever influence Aristotle may have had was confined to just two or three years, beginning when Alexander was thirteen and ending when he was fifteen, at which age he was appointed a Regent before embarking on his Asiatic campaigns. The next five years, after Alexander's departure, are mainly a blank period in our account of Aristotle's life. He evidently remained in Macedon, still at the court of Philip or perhaps back in Stagira. The Roman encyclopaedist Pliny contends that Aristotle at this time benefited scientifically from his association with Alexander. His account has it that Alexander made available to Aristotle the services of all of his hunters, fishermen, and all those engaged in animal husbandry of any kind.[14] The astonishing breadth and extent of Aristotle's empirical description in his biological works lends at least some credence to this story. In the *History of Animals*, for example, Aristotle describes in minute detail, to take but a few examples, the habits, habitats, and patterns of reproduction and maturation of nine varieties of bees (*HA* viii 40, 623b5–627b23); the hunting techniques of a great variety of marine creatures, explaining, for instance, how the cuttlefish is the most cunning of the cephalopods, by dint of its ability to discharge its pigment for concealment (*HA* ix 37, 621b10–622a2); and the joint structures of the legs of such diverse animals as elephants, crocodiles, lizards, and seals (*HA* ii 1, 498a1–b3). The grain of the description tends to be at this level of exactness or higher:

> The seal is a kind of imperfect quadruped, for its front feet are placed just behind the shoulder-blade, resembling hands, like the front paws of the bear; for they are furnished with five toes, and

> each of the toes has three flexions and a nail of inconsiderable size. The hind feet are also furnished with five toes, and in their flexions and nails they resemble the front feet; but in shape they resemble a fish's tail.
>
> (*HA* 498a32–b3)

Or to take another example, also from the realm of marine biology:

> The fishing-frog hunts little fish with a set of filaments that project in front of its eyes; they are long and hair-like, being rounded at their tips; they lie on either side and are used as bait. The animal stirs up a place full of sand and mud and having concealed itself, it raises the filaments, and when the little fish strike against them, it draws them in underneath into its mouth
>
> (*HA* 620b13–19)

Aristotle evidently compiled his massive descriptions of animal life and activity from close empirical observation augmented by the precise descriptions of those involved in animal husbandry made available to him.[15]

In any event, we know next that Aristotle returned to Athens more or less concurrent with the death of Philip in 335. Upon his return, Aristotle set up his own school in an area dedicated to the god Apollo Lykeios, whence the name the Lyceum.[16] Those in Aristotle's school were also called the Peripatetics, a name derived from Aristotle's reported habit of walking about during his lectures and discussions (*peripateô* = to walk around in Greek), or, more likely, from the existence of an ambulatory (*peritpatos*) on the grounds of his school. In the thirteen years spent there before leaving Athens for his last time, Aristotle and his associates conducted research at a feverish pace. It is likely, though the matter is disputed, that most of the philosophical works of Aristotle which survive today derive from this period. The school's research portfolio was, however, hardly confined to what is today regarded as philosophical investigation. Aristotle and his colleagues, who included Theophrastus, Eudemus, and Aristoxenus, pursued research programmes *inter alia* into botany, biological taxonomy, music, mathematics, astronomy,

medicine, cosmology, physics, the history of philosophy, the arts, psychology, ethics, rhetoric, and government and political theory. In all these areas, the Lyceum sought to collect manuscripts, assembling, according to Strabo,[17] the first great library in antiquity. We know, for example, that in politics alone the Lyceum undertook the task of collecting the constitutions of some 158 cities,[18] evidently in an effort to arrive at a comprehensive description of political arrangement, with the further goal of determining what the ideal constitution might be, but then also, more practically, which sorts of governments would be best suited to which forms of material and social circumstances. One finds traces of research into all these areas in Aristotle's surviving writings.[19]

Evidently the brisk pace of research in the Lyceum continued unabated for over a decade. During that time, Aristotle's wife Pythias passed away and he developed a new relationship, whether into formal marriage or not remains unclear, with Herpyllis, who was also a native of Stagira. Together they had a child, Nicomachus, named for Aristotle's father, for whom his *Nicomachean Ethics* is named, either because it had been dedicated to him or, less likely, because the son edited the work after Aristotle's death.

After thirteen years in Athens, Aristotle again found cause to retire from the city. It seems reasonable to conclude that prudence once more played its part. His second and final departure from Athens was probably hurried along by a resurgence of anti-Macedonian sentiment. After Alexander succumbed to disease in 323 in Babylon, Athens had greater latitude to vent its long-simmering anti-Macedonian sentiment.[20] In its wake, Aristotle was evidently charged with impiety, just as Socrates before him had been. In Aristotle's case, the pretext offered was a Paean, or Hymn, praising the character of Hermeias, the tyrant who had welcomed him in Assos upon his departure from Athens after Plato's death. Aristotle had also erected a statue in his honour at Delphi, set atop an inscription extolling the tyrant's virtue. The hymn, which survives,[21] compares Hermeias, a eunuch and one-time slave, in glory to various Greek heroes, a coupling perhaps likely to offend common Greek sentiment though hardly impious. Finding no special reason to defend himself against such transparently trumped-up charges,

Aristotle withdrew directly to Chalcis, on the large island of Euboea, remarking, as an ancient legend has it, that he was compelled to go lest Athens be permitted to sin twice against philosophy.[22] He died of natural causes in Chalcis the following year, in 322.

1.4 READING ARISTOTLE

Aristotle left his library, including his own writings, to his friend and immediate successor of the Lyceum, Theophrastus. Stories abound as to their subsequent disposition. A once well-received story, that his writings were for the most part neglected until recovered in a damp chest by Andronicus of Rhodes in the second century AD, is difficult to credit, since it relies on sources which are otherwise mainly unreliable.[23] Whatever the path of their transmission, however, Aristotle's surviving writings provide a number of challenges to his modern readers. Scholars wrangle about their relative datings, in some cases about their authenticity, and in many, many instances, about the appropriate constitution of the texts themselves. That is, the translations we read today are provided from texts which have only recently – within the last century or two – been put into anything like authoritative versions. All modern translations derive in one way or another from the monumental 1831 Prussian Academy edition of Immanuel Bekker, whose pages and columns provide the standard reference numbers for all modern texts and translations, including those employed in the current volume.[24] Still, since the time of Bekker, many advances have been made in the art of paleography, new manuscripts have been uncovered, and new readings have been adopted. The process is ongoing.

Scholars are hindered in their attempt to establish canonical texts by the character of Aristotle's prose. As will be evident to anyone reading Aristotle for the first time, whether in the original Greek or in translation, his writing can be extraordinarily difficult to understand. Most students encounter Aristotle after having been introduced to the supple, engaging, and highly literary dialogues of Plato. Where in Plato a novice reader will find humour, vivid characterization, and striking deployment of imagery, all often advanced in nimble banter and draped in lilting prose, in Aristotle

the same reader confronts terse, crabbed, and gritty prose, much of it ungainly in syntax, often littered with unexplained technical jargon, and sometimes veering into the impenetrable. At a first pass, even a generous reader is bound to be perplexed by such arid observations as:

> For if **A** belongs to no **B** but to every **C**, e.g. animal to no stone but to every horse, then if the propositions are stated contrariwise and it is assumed that **A** belongs to every **B** but to no **C**, then a true conclusion will emerge though the propositions are wholly false. The case is the same if **A** belongs to every **B** but to no **C**; for we shall have the same deduction.
>
> (*APr.* 55b10–16)

Though what Aristotle says here is perfectly true,[25] his manner of presentation is not likely to engage an unschooled reader. It is therefore striking, given how far removed Aristotle's writings are from Plato's in tone and temperament, that Cicero, himself one of the greatest stylists of antiquity and a justifiably assured judge of the prose of others, ranked Plato very highly, but then added that if Plato's prose was silver, Aristotle's was a flowing river of gold.[26]

As will be plain to even the casual reader of Plato and Aristotle, Cicero cannot be speaking of Aristotle's writings as we have them. The current Aristotelian corpus comprises some thirty-one works, with occasional overlap of closely parallel passages.[27] It seems likely that the works we possess were not prepared by Aristotle for public consumption, but were rather in-house working drafts, more akin to a professor's evolving lecture notes than to her published treatises. Aristotle mentions some 'exoteric' writings, presumably of his own composition, which were intended for a popular audience (*Pol.* 1278b30 and *EE* 1217b22, 1218b34). Unfortunately, we do not possess these works, although fragments of a few dialogues written by Aristotle survive and in them we do encounter some arrestingly lovely prose. It is also occasionally possible to get a glimpse of the style which so impressed Cicero in the main surviving works, but only very rarely. For the most part, what we read is syntactically kinked and simply not pretty.

The question thus arises as to how best a novice reader might persevere through a first encounter with Aristotle. Key to making progress with his texts is understanding some features of his method. First, and most importantly, it is crucial to bear in mind Aristotle's adage that 'For those who wish to solve problems, it is helpful to state the problems well' (*Meta*. 995a27). When confronted with a philosophical problem, Aristotle characteristically begins by stating it as crisply as possible. To take just one illustration, we may be confronted with a problem as to whether human beings can be akratic, or weak-willed (*EN* vii 3). Why? We take it as an obvious datum of our lives that we sometimes decide to pursue a course of action, perhaps to better ourselves by initiating an exercise programme, but then fail to implement our plans, only later to engage in regret and self-recrimination. We thus take it as obvious that *akrasia* is possible, because we recognize it with lamentable frequency in our own conduct.

Then, however, we learn that Socrates has given a surprisingly compelling reason for doubting that such *akrasia* is possible. As he suggests, if people always pursue their own perceived interests and forever try to maximize their own well-being, then a failure to implement an exercise programme when planned must reveal not weakness, but an unvoiced belief to the effect that such activity is not really the best course of action, all things considered. It must be the case, as Socrates seems to suggest, that if we *know* that exercise really is good for us, and we *in fact* want what is good for us, as we say we do, then our failure to exercise must stem not from weakness but from a cognitive error of some sort. In general, if some course of action *a* is good for us, and we in fact want what is good for us, but yet do not pursue *a*, then we must not have grasped the relevant fact, namely that *a* is what is good for us.[28] So, we have a problem: the Socratic contention, which is motivated by widely shared convictions, conflicts with what most of us accept as an all too common phenomenon, that we are sometimes lazy and weak-willed.

Here we find ourselves confronted with a puzzle, an *aporia* in Aristotle's terms, because we have good reason to accept some proposition, but then again some good reason to reject it – and

we know that we cannot do both. When Aristotle approaches this sort of puzzle, he begins by pausing to reflect upon the character of the puzzle he means to address. Do we want to prove that *akrasia* is after all possible? Or are we assuming that *akrasia* is actual and so possible, and hence really only interested in explaining what must be true about our access to our own psychological states when we act in self-undermining ways? Or is it our goal rather to explain how *akrasia* might *seem* possible when we know, on the basis of a proof, that it really is anything but? We will make progress, contends Aristotle, in this as in other philosophical puzzles, only if we first set out the problem to be tackled in clear-headed terms.

The allusion to Socrates in the formulation of the problem of *akrasia* points to another useful guideline for reading Aristotle's works. When first working through a problem, Aristotle begins by sorting through what he calls the *endoxa*, variously translated as 'reputable opinions' or 'entrenched opinions' or 'credible beliefs' or simply 'common beliefs'. (In ordinary Greek, a man who is *endoxos* is someone of high repute or an honoured citizen.) This range of translations is unsurprising and unobjectionable, since Aristotle lists the sources of *endoxa* in these terms: '*Endoxa* are those opinions accepted by everyone, or by the majority, or by the wise – and among the wise, by all or most of them, or by those who are the most notable and having the highest reputation' (*Top.* 100b21–23).

Aristotle thinks it salutary to collect *endoxa* for two distinct, though continuous reasons. First, there is the obvious point that it is a waste of time to re-invent the wheel; where progress has already been made, it is otiose to begin afresh, ignoring the advances made by predecessors. This, it should be stressed, is not for Aristotle merely a form of pietistic rhetoric. He thinks that we have something to learn from our predecessors, as often by their mistakes as by their accomplishments, and so we should not waste our own intellectual resources by ignoring them. Second, as often as not, our predecessors had good reason to formulate problems in the manner they did. We can accordingly learn something about the texture of the problems that confront us by paying attention to the terms in which our predecessors have cast them.

Thus, for instance, if we run into an intellectual impediment or puzzle, an *aporia*, this is as likely as not due to the fact that we have unwittingly made a false assumption along the way. To revert to our earlier example: once we reflect upon the assumptions about human psychology which generate Socrates' worry, we may uncover more nuance than he was willing or able to see. When we do, we will find ourselves able to draw distinctions which deprive Socrates' argument of much of its force. In this way, philosophical progress is possible.

More generally, Aristotle thinks that we begin in philosophy precisely where we are: *we begin with how things appear to us* – we begin, that is, by stating the appearances, the *phainomena*, of which the *endoxa* form a subclass (*EN* 1154b3–8). (They form a subclass when they serve as the starting points of dialectic, the form of argument appropriate to non-scientific frameworks (*APr* 46a17–27; *PA* 639b5–10; *EN* 1145b2–30).)[29] In general, Aristotle suggests, when we find ourselves confronted by a puzzle in some area, whether natural philosophy, or philosophy of mind, or ethics, or metaphysics, it is best to begin by reflecting upon the way the world appears to us in our untutored apprehension of it. It *appears*, for example, that we are sometimes weak-willed. It also appears, in a different domain, that every physical event has a cause, for example that a billiard ball does not move unless something causes it to move. Of course, such appearances may be deceiving; or they may be accurate. Scholars divide on the question of the degree to which Aristotle maintains that appearances should constrain us in our philosophizing. Often enough, Aristotle suggests that we should do what we can to preserve appearances, where possible; yet he stands ready to abandon them whenever science or philosophy demands (*Meta.* 1073b36, 1074b6; *PA* 644b5; *EN* 1145b2–30). Thus, for example, if it appears to us that the universe is geocentric, then we will be foolish to insist that appearance and reality match if it is subsequently shown that the heavens do not rotate around the earth as their midpoint.

Still, it is difficult to state in abstract and exceptionless terms when appearances should be respected and when they may be abandoned. Perhaps this is a general worry in philosophy, but it

has a special focus in Aristotle, because he has a methodological precept of beginning a discussion by collecting the phenomena and surveying the *endoxa*. For the novice reader, it merits mentioning only that Aristotle will often begin a discussion by collecting the appearances and the credible beliefs only to test them in order to determine their worth. In practical terms, this means that one very regularly finds Aristotle introducing a topic with 'it seems' (*dokei*) that such and such, or suggesting that something 'appears' (*phainetai*) to be the case, without thereby taking a stand on whether what seems to be the case *merely* seems to be so or really is so, or whether what appears to be so ultimately coheres with reality. In Aristotle's Greek, these phrases have roughly the range of meaning we find in their English counterparts. We range in English, for instance, from, 'He seems fierce, but he's actually a pussycat' to 'Did you forget to buy the milk?' 'Yes, it seems that I did.' Or, similarly, we say both that 'Appearances can be deceiving' and that 'The Prime Minister made an unannounced appearance.' So too Aristotle sometimes means to suggest that what appears to be so is so; other times, he means that what appears to be so is not really so; very often, however, he intends to be neutral, suggesting that we need to determine whether what appears to be so is really so or not. Generally, when dealing with Aristotle, we must proceed as we do in English, by gleaning his meaning from context. Most importantly, though, we should not prejudge whether he intends to endorse or discard a reputable opinion (*endoxon*) or appearance (*phainomenon*) upon its first mention in the setting out of a problem (*aporia*). Mainly, though, this is a somewhat unstable generalization, Aristotle tends to be neutral at the moment of introducing a credible belief or appearance, and while he respects the phenomena and the *endoxa*, he does not regard himself as beholden to them. Appearances and reputable opinions may crumble in the face of sustained scrutiny. Still, he does often enough begin with the presumption that credible beliefs are credible for a reason and that appearances often track the truth – if not the surface truth presented by the appearance, then a discoverable truth whose relation to our initial appearance becomes clear upon investigation and analysis.

Further, a novice reader needs to be alert to the fact that terms such as *endoxon* and *phainomenon* are regularly appropriated by Aristotle and given quasi-technical status. In fact, these are but two examples among many, central, to be sure, but none too exceptional. Perhaps because primarily intended for an in-house audience, Aristotle's extant writings are replete with technical terms, neologisms, compressed and ungainly syntax, unexplained abbreviations, jargon, and non-standard idiom. This is one central reason why his works tend to be forbidding and sometimes off-putting to those first encountering them.[30] If it is at first discouraging, it bears reflecting that serious thinkers usually find it worth the effort required to move beyond the initially challenging characteristics of Aristotle's prose.

In general, even with the aid of a study guide, a novice reader can become bewildered when first approaching Aristotle. He is capable of moving quickly from a relatively clear and transparent statement of a puzzle to a discussion so tangled and dense that scholars quarrel even about its primary terms, and thence to disagreements about Aristotle's preferred resolution; these interpretations occasion still further discussion and debate and the conversation continues through the generations. To be sure, many of the exegetical difficulties we encounter with Aristotle result from the troubled state of his surviving writings. In part, however, such debate is also a natural and welcome consequence of the kinds of topics Aristotle tackles. As Peter Strawson has aptly noted, work in philosophy may be introductory but never elementary: 'There is no shallow end to the philosophical pool.'[31] While certainly apt as a general characterization of philosophy as a discipline, Strawson's observation has a special resonance in the study of Aristotle. If there is any recompense for the difficulties inherent in working through Aristotle's texts, it can only be the philosophical buoyancy they afford.

1.5 ARISTOTLE'S CORPUS AND THE STRUCTURE OF THE ARISTOTELIAN SCIENCES

Whatever their provenance and intended audience, the corpus of writings having come down to us under Aristotle's name contains

some spurious works, some works whose authenticity remain a matter of scholarly debate, and many more rightly accepted as genuine. A reasonable estimate would be that we now possess thirty-one works by Aristotle, not including the many fragments preserved primarily in the form of quotations and paraphrases from later authors.[32]

Because we do not have secure information concerning the dates of composition for Aristotle's works, scholars, assuming that such knowledge would help us understand his developing philosophy, rely on a series of mutually reinforcing considerations to determine their relative order. These include stylometric data, involving diction and the features of his syntax; doctrinal matters, including some permanently thorny issues regarding the effect of his relationship to Plato on his independent intellectual development; the use of place names, which tend to indicate that the biological works, unsurprisingly, were written in his period away from Athens; intertextual references; and historical allusions of one form or another.

Taken individually, each of these techniques is fairly unreliable. For instance, as regards intertextual reference, we cannot assume that one work is later than another simply because the one refers to the other. We must always allow for the possibility that Aristotle or a later editor added a given reference later than the referring work's original date of composition. Similarly, doctrinal determinants invariably become mired in philosophical controversy. Thus, while it is often tempting to regard Aristotle's more sophisticated and technical work as late productions and his simpler work as early, the possibility always remains that the apparently simpler works are intended to summarize or supersede the more complex pieces, as Hume's *Enquiry Concerning Human Understanding* stands in relation to his *A Treatise of Human Nature*, or Kant's *Prolegomena to Any Future Metaphysics* to his *Critique of Pure Reason*. In the case of these later authors we have reliably accurate information regarding their intentions and very accurate information regarding their dates of publication. For Aristotle, we are in the dark in both regards – and we are not even able to speak non-anachronistically in terms of 'publication' at all.

These considerations are consequential in many interrelated ways for our understanding of Aristotle's philosophy. To take one central example, we can consider a work often taken to be early in virtue of its simplicity and relative ease of doctrine, the *Categories*. In this work, Aristotle adumbrates a theory of substance which seems to be overturned by the much more complicated treatment of the same topic in the *Metaphysics*, which thus seems to be the later work. In many respects, the works seem to contain theories of substance which are positively incompatible. Even so, some scholars deny that they are incompatible, recommending instead that the *Metaphysics* be regarded as elaboration of the *Categories* rather than its rejection. To complicate matters further, if we look beyond the doctrinal matters, we discover that various other criteria for dating do not always line up. Thus the supposedly youthful *Categories* contains a reference to the Lyceum (*Cat.* 2a2), suggesting a date not earlier than Aristotle's second stay in Athens, when he set up his own school.[33] Similarly, a companion piece to the *Categories*, *De Interpretatione*, contains an evident reference to *De Anima* (*De Interp.* 16a8), thought by most scholars to be very late on doctrinal grounds.

Even so, taken corporately, these criteria do provide a plausible – though certainly disputable – picture of Aristotle's development. Some works, including the *Categories* and related efforts, in all likelihood come from an earlier period, when Aristotle was still a member of the Academy (367–347). Many of the biological works appear to originate from the period when Aristotle was away from Athens (347–335), and many of the most demanding philosophical works in the corpus, including the *Metaphysics* and *De Anima*, seem to have been composed during his last period in Athens (335–323). Although it would be desirable to have secure knowledge in this area, scholars must accept most relative dating schemes as tentative.

We can, however, be a bit more confident about the character of Aristotle's works, both because they form natural groupings and, more importantly, because Aristotle himself offers a division of the sciences (*Top.* 145a15–16; *Phys.* 192b8–12; *DC* 298a27–32, *DA* 403a27-b2; *Meta.* 1025b25, 1026a18–19, 1064a16–19, b1–3;

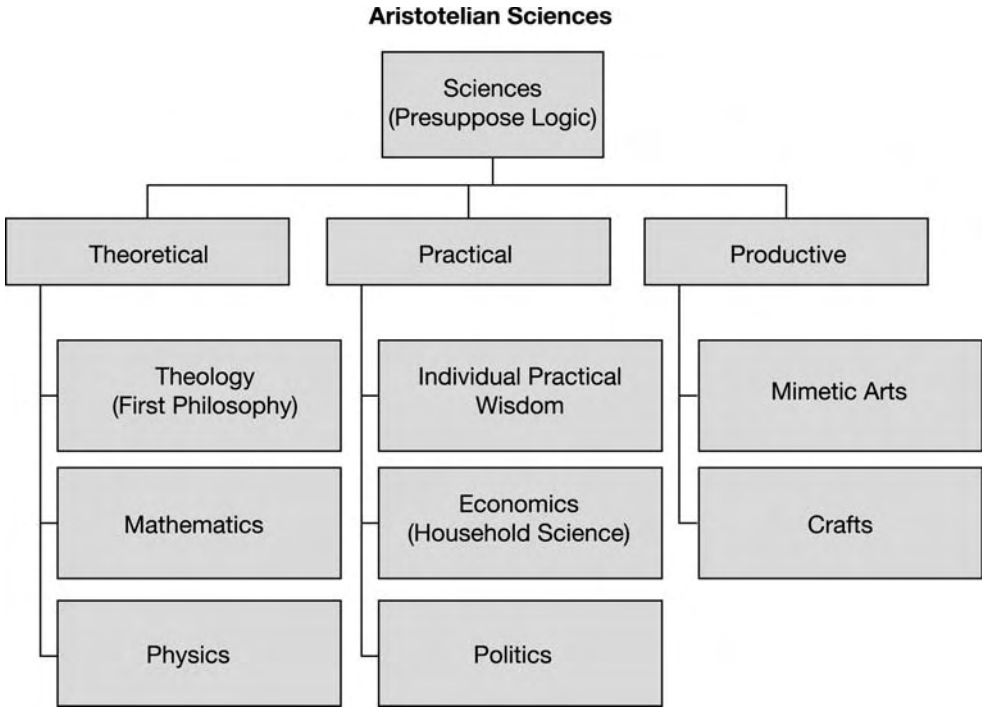

Figure 1.1

EN 1139a26–28, 1141b29–32). Although the fine-grained details are difficult, it is clear that he accepts the general division as shown in Figure 1.1.

The general differentiation at the highest level turns on the orientation of the sciences: theoretical sciences seek knowledge; practical sciences concern conduct and goodness in action; and productive sciences aim at beautiful or useful objects. Among the theoretical sciences are first philosophy, or metaphysics as we now call it;[34] mathematics; and physics, or natural philosophy.[35] The sub-division of physics comprises topics in natural philosophy generally, but also special sciences such as biology and astronomy. Practical sciences all concern themselves with conduct, and not with the creation of products external to sciences themselves, whereas the productive sciences are crafts, aiming at the production of artefacts or external productions more broadly. The productive sciences include ship-building, agriculture, and medicine, and also the arts, which produce music, theatre, and dance.

Note that this hierarchy makes no mention of logic. Although the word 'logic' in our sense was unknown to him, Aristotle did develop the first detailed system of logic and inference. In

Aristotle's terms, logic belongs not to science, but to that branch of learning which subserves all the sciences in common. This branch investigates the nature of correct argumentation, as well as the forms of argumentation appropriate to various occasions.[36] One does not, for example, expect the same rigour and precision in the context of the courtroom that one demands in the presentation of the most exact sciences. The group of Aristotle's works constituting this area of investigation has come down to us under the general title of *Organon* (*organon* = tool in Greek). Although not so characterized by Aristotle, the name is an apt one. The works falling under this heading deal with category theory, the doctrine of propositions and terms, logic and argumentation, the structure of scientific theory, and to some extent the basic principles of epistemology.

Slotting Aristotle's surviving works into this scheme of division, we end up with the following basic divisions:

- Organon
    - *Categories* (*Cat.*)
    - *De Interp.* (*DI*)
    - *Prior Analyitics* (*APr*)
    - *Posterior Analytics* (*APo*)
    - *Topics* (*Top.*)

- Theoretical Sciences
    - *Metaphysics*, or First Philosophy (*Meta.*)
    - *Physics* (*Phys.*)
    - *De Anima* (*DA*)
    - *Generation and Corruption* (*GC*)
    - *De Caelo* (*DC*)
    - *Parva Naturalia* (*PN*)
    - *Parts of Animals* (*PA*)
    - *Movement of Animals* (*MA*)
    - *Meteorologica* (*Metr.*)
    - *Progression of Animals* (*IA*)
    - *Generation of Animals* (*GA*)

- Practical Science
    - *Nicomachean Ethics* (*EN*)
    - *Eudemian Ethics* (*EE*)
    - *Magna Moralia* (*MM*)
    - *Politics* (*Pol.*)

- Productive Science
    - *Rhetoric* (*Rhet.*)
    - *Poetics* (*Poet.*)

Although Aristotle nowhere provides just this list, the groupings as given conform to his general divisions of the sciences when taken together with his scattered remarks characterizing the goals of the works listed.

This list is intended to help Aristotle's readers situate themselves in his large corpus. (*The Revised Oxford Translation*, which includes spurious works and some fragments, runs to 2465 pages.) It also provides much of the structure for the chapters to follow. We begin in Chapter Two with Aristotle's general explanatory framework, the doctrine of the four causes, since this framework informs virtually all of his philosophy outside of the *Organon*; this chapter is, consequently, presupposed for all of the subsequent chapters beyond Three and Four.[37] Chapters Three and Four take up facets of the *Organon*, focusing especially on Aristotle's category theory, his development of logic, and his theory of dialectic. From there, thus prepared, we move in Chapters Five, Six, and Seven, to Aristotle's core theoretical science: natural philosophy, where he considers the nature of change, time, and the infinite; metaphysics, where he investigates especially the theory of substance; and psychology, where he focuses primarily on the soul and its capacities of perception and thought. Although his present-day readers do not always appreciate this, Aristotle's practical philosophy and political theory, as considered in Chapters Eight and Nine, presuppose the metaphysical and psychological theories developed in the theoretical sciences. A full understanding of Aristotle's ethics and politics thus requires a basic grounding in his more

technically theoretical investigations. The same holds true, perhaps to an even greater extent, for Aristotle's treatment of the productive sciences of rhetoric and poetry, treated jointly in Chapter Ten. In these areas, there has been a tendency to read Aristotle's views as if they were free-standing, lacking the theoretical and practical underpinnings he provides for them. This practice has resulted in both misunderstanding and unnecessary controversy. Consequently, Chapter Ten assumes familiarity with this background and seeks to highlight the ways in which any constructive understanding of rhetoric and tragedy requires a prior familiarity with the larger explanatory framework of Aristotle's philosophy, upon which they depend in large and small ways.

1.6 CONCLUSIONS

We know the basic outlines of Aristotle's life, although we do not have any secure biographical data about his character or personality traits. While it is tempting to speculate on the basis of the scanty and unreliable reports that have come down to us, our doing so is mainly counter-productive. In any event, neither the unremittingly harsh nor the unswervingly laudatory portrait of Aristotle in the ancient doxographical tradition does justice to the corpus of his writings as we have them.

When we turn to Aristotle's works with fresh eyes, unprepossessed by an antecedent decision to find in them a man who is magnificent or base, or theories which are brilliant or abysmally outmoded, we discover a corpus of writings which is intellectually intricate, in many places obscure, often challenging, occasionally alien, and yet consistently arresting in its nuanced philosophical insight and its penetrating intellectual acumen. Aristotle's works, even in their current unhappy state, present both prospect and promise for sustained intellectual engagement. While there is no call to be fawning, especially at this early stage of our inquiry, we should appreciate that it is surely no accident that Aristotle's works have survived to enjoy the long-lasting influence they have earned. That acknowledged, we should surely direct to Aristotle an adapted version of the adage he had himself aimed at Plato, and

recall that however admiring or disparaging our ultimate view of him may prove to be, our primary duty lies not to the man but to the truth. This is, after all, precisely what he requests.

FURTHER READING (* = ESPECIALLY SUITED TO BEGINNERS, IN TERMS OF CLARITY OR ACCESSIBILITY)

Primary Sources

Diogenes Laertius, *Lives of the Philosophers* v 1–16. Aristotle's will, preserved in DL v 11–16, is also translated in *The Complete Works of Aristotle: The Oxford Translation*, ed. J. Barnes (Princeton: 1984). pp. 2464–65.

Strabo, *Geography* xiii

Secondary Sources

Barnes, Jonathon, 'Roman Aristotle', in *Philosophia Togata II*, ed. J. Barnes and M. Griffith (Oxford University Press: 1997), pp. 1–69

Düring, I., *Aristotle in the Ancient Biographical Tradition* (Göteborg: 1957)

*Grote, George, *Aristotle* (London: 1880), pp. 1–26

*Guthrie, W. K. C., *Aristotle: An Encounter* (Cambridge University Press: 1981), pp. 18–65

Lynch, J. P., *Aristotle's School* (University of California Press: 1972)

Shute, Richard, *On the History of the Process by which the Aristotelian Writings Arrived at their Present Form* (Clarendon Press: 1888)

Two

Explaining Nature and the Nature of Explanation

2.1 BEGINNING IN WONDER

'Human beings began to do philosophy', says Aristotle, 'even as they do now, because of wonder, at first because they wondered about the strange things right in front of them, and later, advancing little by little, because they came to find greater things puzzling' (*Meta.* i 2, 982b12). If we reflect at all on the universe of common experience, if we scratch the surface even a little, we find puzzles and peculiarities residing not far below. That we find such puzzles – about space and time, about human freedom and autonomy, about justice and goodness, about the character and reliability of our own faculties – is only to be expected: the universe is a puzzling place. Consequently, while not everyone will be a philosopher or a physicist, as long as we have leisure from labour most of us will wonder about the universe and our place within it. When we wonder, we begin to philosophize.

As Aristotle sees things, we do not need to seek out puzzles. They are, as he says, right in front of us. If we look into the night sky, we readily wonder whether the universe is infinite in space or somehow bounded. Questions about spatial limits readily give way to questions about time and order. Does the universe have a beginning in time, perhaps because it is the handiwork of a surpassingly great being whose intentional actions and purposes explain its order and regularity? Or do the regularities of nature owe simply to brute laws, without there being any further explanation of their necessity? Or, then again, are we already mistaken in presuming that there are regularities in nature? Perhaps the

laws we take ourselves to perceive as given by nature are in fact imposed by us, in a desperate attempt to find meaning and regularity in a world of undifferentiated and purposeless disarray.

For that matter, does it make sense even to suppose that the universe could have a spatial boundary or a beginning in time? What, we are inclined to ask, can be said of the period *before* the universe began or of the area *outside* its outermost boundaries? Upon even a moment's reflection, it is initially hard to fathom that the universe extends infinitely backwards in time. For if that is so, it must also be so that an infinite number of moments have come and gone, and that right now, today, in this instant, it is entirely possible that someone, an angel perhaps, or some other meek and dutiful creature, has been always counting backwards, from infinity, and has just now finished counting ever downwards, having at long last reached zero, the final member in the infinite series of numbers now actually enumerated aloud. If we bristle at the suggestion that such a scenario is coherent, then we seem pushed back in the direction of thinking that the universe cannot extend infinitely backwards in time; but then, again, we wonder: what of the period *before* time began?

These and like questions incited wonder very early in the history of Greek philosophy, and Aristotle found them irresistibly engaging. In his *Physics*, Aristotle treats the nature of time, infinity, boundary, chance, purpose, and change. He typically begins, as we have seen, by recounting the phenomena and recounting the *endoxa*,[1] or reputable opinions, where as often as not these derived from the speculations of the philosophers who preceded him. He does so because he thinks we can learn about our own puzzles by considering how others who have thought hard about them have done so, even if we find it necessary to disagree with them. In fact, Aristotle regularly faults his predecessors, and he does so in a patterned and predictable way: he commonly contends that their explanations are at best only partially correct, first because they rest upon false assumptions but also because the earliest philosophers had not reflected sufficiently upon the character of explanation itself. If we wish to explain some phenomenon completely and accurately, then our explanations had better adhere to some

canon of correctness. It is not enough that we happen to find them convincing.

Aristotle's way forward in philosophy and science is to reflect overtly upon the standards of adequacy in explanation. We make progress, he thinks, only by beginning in wonder and then moving to explanations which satisfy objectively given standards of adequacy. We *do* make progress, Aristotle supposes; when we do, however, we often enough discover newer more difficult problems lurking in our solutions, with the result that we turn directly to them once we have made our way a little and so push ever forward.

Why should we behave this way? Why, as a species, do humans as a matter of fact try so relentlessly to understand the universe and our place within it? As we have seen, Aristotle supposes that we wonder for the simple reason that it is our *nature* to do so. 'Every human being, by nature, desires to know' (*Meta.* i 1 982a23).[2] Aristotle thus locates our nature in our *cognitive capacities*, in our natural and indomitable drive to learn and acquire knowledge.

Thus far, then, we might ask Aristotle for a reason to agree with him when he contends that humans have a nature or that we have just the sort of nature he supposes. Judged from a certain remove, Aristotle's first contention may appear rather antiquated and unstable: why suppose that humans have a nature at all, of any kind? After all, along with natures go *essences*, and more recent thinkers have had myriad motivations – some political, others biological, and still others more narrowly metaphysical – for wanting to assail the very existence of essences. If we have natures, then we are essentially a certain way; but we are not essentially any way, these detractors contend. We are free to create ourselves as we wish, to be the architects of our own essences. So, this talk of natures must cease.

Aristotle disagrees with both sorts of critics, and believes that he can show that we have a nature of a definite and discernible sort, one having everything to do with our innate cognitive endowments and little to do with our proclivity towards self-promotion. Since his views are controversial, Aristotle owes us a defence.[3] The first inkling of the sort of defence he is inclined to provide has

already made an appearance: human beings, as a matter of simple and undeniable fact, *wonder* about things. We are information-seeking sorts of beings. We want to know how and why the world works; we want to know, closer to home, how and why our bodies function as they do, how and why our minds and perceptual systems acquire, store, and process data; how and why we must or should act when dealing with others of our kind, whether justice requires conduct of a certain sort or whether justice is itself fashioned to suit the conduct we prefer; and we want to know whether the universe is a purposeful sort of place or a vast cauldron of atoms swirling in an indifferent void.

Many of the things we wish to know have an immediate practical import, as when we want to know whether a given mutated microbe can be controlled with an available antibiotic. Other times, we want to know things with no immediate practical import, and with perhaps no remote practical import either. What is the highest Mersenne prime? What colour skin did the Brontosaurus have? Did Napoleon die of lead poisoning induced by the colour pigment used in the drapery in his room? Why do some people mispronounce the word 'nuclear' in predictable and patterned ways? In these cases, we seek explanations and are satisfied when we have them, though we do not suppose that our doing so holds for us any immediate practical benefit, or indeed even any benefit at all beyond the satisfaction of a curiosity resolved. In short, we human beings seek explanations, and then provide them for ourselves, some good, some bad, some practical, some theoretical, some hopeful, some rather less so. This broad fact is undeniable. Like other facts, contends Aristotle, this fact wants an explanation. Aristotle's first approach at an explanation of our explaining proclivities is simple: we desire explanations because it is our nature to do so. We seek knowledge not just accidentally or haphazardly, but as a result of our essential features – as a result of those very features which make us the kind of beings we are.[4]

This is why, contends Aristotle, we begin in puzzlement and move from wonder to world-view. Philosophers and scientists alike identify patterns they take to be significant, notice anomalies and puzzles in those patterns, and then redouble their efforts to

provide ever deeper and more penetrating explanations. At each stage of development, inferior explanations give way to superior explanations.

2.2 EXPLAINING EXPLAINING: THE FOUR CAUSES

There are two ways of thinking about discarded explanations, corresponding to an important distinction between two conceptions of what explaining consists in. At one stage scientists wondered why malaria spread so rapidly in tropical areas. An explanation was proposed to the effect that warmer water in temperate zones is hospitable to spores carrying the disease. Eventually, that was shown to be false when it was demonstrated that certain sorts of mosquitoes are the primary transmitters. How should we think about the initial proposal regarding spores in the drinking water? We may say either: (i) our initial explanation was supplanted by a superior explanation; or (ii) spores in the drinking water never *really* explained the spread of malaria at all. The first way of speaking treats explanations as *interest-relative* or as somehow *subjective*, such that something's qualifying as an explanation simply consists in its satisfying a curiosity. On this approach, it is an explanation of Penelope's being a moody person that she was born on the cusp of Pisces, because someone somewhere is satisfied when that reason of her conduct is offered. The second approach to explanation, Aristotle's preferred, treats explanation as *objective*, such that *x* explains *y* just in case (i) *x* and *y* are states of affairs in the world, and (ii) states of affairs of the *x*-type *cause* states of affairs of the *y*-type.[5] As he says:

> Since the object of our inquiry is knowledge, and we do not think we know a thing until we have grasped *why* (*dia ti*) it is so (where this is to grasp its primary cause), it is clear that we must also find this in the case of coming to be, perishing, and of all natural change, so that when we know the principles of things we can endeavour to refer what we are seeking back to these principles.
>
> (*Phys*. 194b17–23; cf. *Meta*. 983a25)

Something's primary cause is not something whose mention happens to satisfy someone. Rather, a primary cause is what *in fact* makes it the case that a certain state of affairs obtains.

In thinking of explanations as objective, Aristotle accepts a commitment to there being causes which obtain in the world prior to and independent of our interaction with it. He also consequently distinguishes between *objectively good* explanations and *objectively bad* explanations, in terms of those which do, and those which do not, cite suitable connections between states of affairs obtaining in the world. It is important, then, that we reflect upon what makes a connection between states of affairs suitable to ground an objective explanation. Aristotle contends that genuine connections, the sort cited in objective explanations, are *causal*. Consequently, in order to understand the sorts of objectively obtaining relations required for adequacy in explanation, it is necessary in the first instance to appreciate when causal relations obtain and when they do not. To come to this appreciation in turn, it is first of all necessary to understand what a causal relation is. After all, someone pressed to explain how the signs of the Zodiac influence our moods might simply contend that the configurations of the heavenly bodies *cause* us to feel and behave in certain ways. If we think that is nonsense, then we also think that only some claims to causal connection are genuine, while contending that others are spurious. Which?

In reflecting on this matter, Aristotle offers a response which begins with an intuitive simplicity, but which grows increasingly complex and technical as he presses it into service in the course of his actual explanatory practice. At the root of his approach to causation is a distinction among kinds of causes: Aristotle doubts that all causal explanations are of a single unified sort. Instead, Aristotle distinguishes *four kinds of causes*, four *aitiai*,[6] all of which, in different ways, provide objectively obtaining grounding relations between the things we want explained and the things which explain them:

> One way in which cause is spoken of is that out of which a thing comes to be and which persists, e.g. the bronze of the statue,

> the silver of the bowl, and the genera of which the bronze and the silver are species.
>
> In another way cause is spoken of as the form or the pattern, i.e. what is mentioned in the account (*logos*) belonging to the essence and its genera, e.g. the cause of an octave is a ratio of 2:1, or number more generally, as well as the parts mentioned in the account (*logos*).
>
> Further, the primary source of the change and rest is spoken of as a cause, e.g. the man who deliberated is a cause, the father is the cause of the child, and generally the maker is the cause of what is made and what brings about change is a cause of what is changed.
>
> Further, the end (*telos*) is spoken of as a cause. This is that for the sake of which (*hou heneka*) a thing is done, e.g. health is the cause of walking about. 'Why is he walking about?' We say: 'To be healthy' – and, having said that, we think we have indicated the cause.
>
> (*Phys*. 194b23–35)

Aristotle thus, crucially and centrally, identifies the four kinds of causes to be cited in objective explanations.

Because Aristotle's language here is a little alien, and in view of the fact that his *four-causal account of explanatory adequacy* is absolutely central to very nearly all of his philosophy, we will first reproduce his contention in more familiar and informal terms, and then offer a series of defences for his claims, the first relatively superficial, but eventually becoming more complex and nuanced.

Aristotle's initial thought is relatively uncomplicated, as can be appreciated by reflecting on a simple illustration. Suppose that we are walking deep in the woods in the high mountains one day and we come to notice an object gleaming in the distance. When it catches our eye, our curiosity is piqued; indeed, Aristotle thinks so much is almost involuntary. When we come across an unexplained phenomenon or a novel state of affairs, it is natural – it is due to our nature as human beings – that we wonder and fall immediately into explanation-seeking mode. What we see glistens

as we approach it, and we wish to know what it is. Why do we wish to know this? We simply do: so much is unreflective, even automatic. As we come closer, we ascertain that what is shining is something metal. Upon somewhat closer inspection, from a short distance, we can see that it is bronze. So, now we have our explanation: what we have before us is polished bronze.

Still, if we find a bit of bronze in the high mountains, we are apt to wonder further about *what it is* – what it is, that is, beyond being so much bronze. We will want to know in addition what it is that is made of bronze. We may conjecture in different ways. Perhaps it is debris from an abandoned mine; or perhaps it is metal left behind by early explorers who had been attempting to transport it over a high pass as material for a machine to be built at their destination; perhaps instead we have before us the remnants of an aeroplane which had crashed in the recent past. No. As we approach still closer, we ascertain that it has a definite shape, the shape of a human being: it is a statue. So now we know what it is: it is a statue, a polished bronze statue.

We also know further, if we know anything about statues at all, that the bronze was at some point in its past deliberately shaped or cast by a sculptor. We infer, that is, though we have not witnessed the event, that the shape was put into the bronze by the conscious agency of a human being. We know this because we know that bronze does not spontaneously collect itself into statues, and we discount the possibility that some discarded metal was perfectly moulded into the shape before us by a random bolt of lightning. So, now we know what it is: a statue, a lump of bronze moulded into a human shape by the activity of a sculptor.

Still, we may be perplexed. Why is there a statue *here*, high in the mountains where it is so unlikely to be seen? Upon closer inspection, we see that it is a statue of a man wearing fire-fighting gear; and we read, finally, a plaque at its base: 'Placed in honour of the seventeen fire-fighters who lost their lives in the service of their fellows on this spot, in the Red Ridge Blaze of 23 August 1933.' So, now we know what it is: a statue, a lump of bronze moulded into a human shape by the activity of a sculptor, placed to honour the fallen fire-fighters who died in service.

When we know that much, thinks Aristotle, we know enough. We know, that is, each of the four kinds of causes we can know about the statue. Although he does not use just these designators for the four causes, the tradition has come to label them as follows:

Table 2.1 The four causes

Cause	*Characterization*	*Illustration*
Material cause	That from which an entity comes to be	Bronze
Formal cause	The shape or structure of an entity	Human shape
Efficient cause	The agent imposing the shape or structure	Sculptor
Final cause	That for the sake of which	To honour the fallen

Aristotle makes two claims about these four causes. First, he suggests that in the vast majority of cases a complete and adequate explanation must cite all four causes.[7] This is why Aristotle feels justified in his frequent criticisms of his predecessors who, he maintains, confine themselves to a subset of the four causes and thus come up short.[8] Second, as he contends directly, 'This, then, is a sufficient determination of the number and of the kinds of cause' (*Phys.* 195b29–30; cf. 198a21–24). There are no kinds of causes beyond the four enumerated.

Taken together, these two claims jointly state Aristotle's four-causal conception of adequacy in objective explanation:

- **E** is an adequate explanation *iff* **E** correctly cites each of the four causes: the material, the formal, the efficient, and the final.

Note that this formulation states both *necessary* and *sufficient* conditions for adequacy in explanation. The necessity condition: an explanation is adequate *only if* it correctly cites each of the four causes; any account which omits a cause where one is available is incomplete and so inadequate. The sufficiency condition: once an explanation has cited each of the four causes, it has left nothing out, and so is complete and adequate as an objective explanation.

The sufficiency condition may seem immediately objectionable, since it encounters two sorts of challenges straightaway. First, a mere enumeration of four causes by itself does nothing to show that there are not yet other, non-equivalent types of causes still to be recognized. Second, it seems entirely possible to cite all of Aristotle's four causes and yet find oneself in need of additional information. If that is so, then it also seems that one could cite all four causes without producing an adequate explanation.

Aristotle is sensitive to the first worry, and in response he provides only a sort of challenge rather than an argument for closure. In his *Metaphysics*, he refers back to his introduction of the four causes, observing:

> We have given sufficient consideration of this matter in the *Physics*. [When applying them] we shall either find another kind of cause, or be more convinced of the correctness of those which we now maintain.
>
> (*Met.* 983a33–b6)

The passage contains an implicit challenge to those who wish to identify some fifth kind of cause beyond the four already attested. If there is another kind of cause not reducible to one or the other of the material, formal, efficient, or final, it needs to be identified by its champion. Aristotle, at any rate, honestly reports that he can find no other. Rightly or wrongly, he now shifts the burden to his detractor. Although necessarily incomplete, this sort of response has at least the merits of forthrightness. Moreover, in any event, it may be observed that many modern thinkers fault Aristotle for countenancing too many kinds of causes rather than too few.

The second objection is more probing. Why suppose that the mere citation of Aristotle's preferred causes should satisfy someone looking for fully explanatory connections between objectively given states of affairs? Suppose, for example, we meet someone wearing a new kind of jacket which repels water while allowing moisture to escape. The material cause of this jacket's success will be a new kind of fabric, using new floropolymer fibers interwoven with nylon. If we want to know how the jacket repels rain, it will be

true, but uninformative to say that it is made of *fabric*. So, someone citing this as the material cause leaves an important feature of the object unexplained.

Aristotle is aware of this sort of worry as well. It illustrates, he thinks, not that another kind of causation is being overlooked, but that each of the individual four causes may be specified more remotely or more narrowly. Recall that when introducing the material cause, he mentioned first the 'bronze of the statue' and 'the silver of the bowl', but then alluded in addition to 'the genera of which the bronze and the silver are species' (*Phys.* 194b24–26; cf. *Phys.* 195b4–13). In speaking of *genera* here, Aristotle has in mind the kinds to which bronze and silver belong. At their most general, the bronze statue and the silver bowl have a common material cause, namely metal; but as we become more specific, their material causes diverge, because they are different sorts of metal, one bronze, with all of the properties of that kind of metal, and the other silver, with its peculiar features. From Aristotle's perspective, we do not cite a new kind of cause when we become more or less specific, but rather we move vertically *within* a kind of cause. After all, in each case, we specify more or less precise kinds of material. In the case of the waterproof jacket, then, what is wanted is a more refined specification of the material cause, not an altogether new form of cause.

The same distinction applies to the other three causes as well. We specify the efficient cause of a sculpture as the sculptor. We might truly mention something more generic, the artist, or something more specific, the sculptor sculpting. When we cite an efficient cause generically, we say something true, but less informative than we do when we specify the efficient cause in its most specific form. The bare existence of a sculptor is obviously compatible with the non-existence of this statue, this shaped bronze, because the sculptor, considered simply as a sculptor, may not have been busy with just this bronze. This is what Aristotle means when he says additionally that causes may be merely potential or actual: 'All causes . . . may be spoken of either as potential or actual, e.g. the cause of a house being built is either a house-builder or a house-builder building' (*Phys.* 195b3–7).

Significantly, from Aristotle's perspective, actual particular causes are not prior in time to their effects, but are co-temporaneous with them: 'Active, particular causes exist and cease to exist simultaneously with the effects they cause, e.g. this house-building man and that house being built; but this is not always true of potential causes – the house and the house builder do not perish simultaneously' (*Phys.* 195b17–21). It is a hallmark of an efficient cause identified most specifically that the action of the cause is concurrent with the effects being produced. This puts Aristotle at variance with some much later, widespread conceptions of causation deriving from Hume, who states flatly, 'The cause must be prior to the effect.'[9] According to the Humean view, a cause always precedes its effect in time,[10] and, moreover, 'Any thing may produce any thing.'[11] These commitments, however difficult to endorse they may be, put pressure on the oft-advanced contention that the efficient cause is most like 'our' notion of causation – if, that is, we are prepared to allow that our notion is broadly Humean. (Although as a general characterization, it is manifestly false that we are all Humeans these days, this does seem to be what most have in mind when they liken the efficient cause to 'our' notion of cause.)

In any event, the difference between Aristotle and Hume is not merely verbal. Aristotle thinks of causes as processes, rather than as static events. He accordingly assumes that a most proximately specified cause is, so to speak, a *causing* of its effect. When he conceives of causes as processes and not as static events, Aristotle assumes that causes are *activities* which result in changes in the subject on which they operate.[12] The difference here is considerable, since at least some of the kinds of problems arising naturally within a Humean framework have no purchase within Aristotle's framework. It is, for example, difficult to imagine the actual process of a fence's being painted white without the fence's also undergoing the process of being made to be white, whereas Humeans are puzzled by the fact that causation requires one event's necessitating another even though, given the discreteness of the events, it is always possible to imagine the one without the other. Wherein, they wonder, does the necessary connection lie?

It would seem peculiar, or perverse, within an Aristotelian framework of efficient causation to allege that 'Any thing may produce any thing.' Although a doctor doctoring a patient might produce healing in a patient, the doctor doctoring will not eventuate in a fence's being made white; nor will a painter's painting bring about a beach tree's shedding its leaves. A properly specified efficient cause, in Aristotle's terms, carries with it an explanation of *why* some motion or change was initiated, and does so in such a way as to make perspicuous the connection between the activity in the agent and the alteration in the patient.

In any event, contends Aristotle, we can specify each of the causes more or less generically, and thus more or less informatively. When we do so, however, we do not advert to different kinds of causes beyond the canonical four, but to the four causes themselves, at different levels of specificity. Although we do not establish the sufficiency condition of Aristotle's four-causal account of explanatory adequacy by appealing to these sorts of distinctions, we do remove one natural and expected sort of objection to it. So far, then, Aristotle may claim that his four-causal theory suffices for adequacy in objective explanation.

The necessity condition requires a fuller and more developed defence. This is especially so since Aristotle regularly upbraids his predecessors, including Plato, for failing to cite causes where they are needed. In our informal motivation of the doctrine of four causes, we saw that we would remain curious about a novel state of affairs, in our case a glimmering hunk of metal high in the forested mountains, until such time as we managed to mention each of the four causes. This may serve as an informal motivation, and may be useful as far as that goes, but it does not go far enough if Aristotle wishes his four-causal account of explanatory adequacy to qualify as an account in the objective sense. So far, as regards the necessity condition, we have mainly noticed a subjective fact about ourselves, namely that in the face of novel phenomena we tend to remain curious until such time as we have cited all of the four causes. If we are lazy, or distracted by hunger, or occupationally obsessed with only one of the four causes, if e.g. we are metallurgists curious only about the tensile strength of

metal, then we may not care about all of the four causes. Once we have ascertained that the shimmering stuff if not, for instance, edible, we may move on. If the only test for adequacy in explanation is the satiation of our curiosity, then we cannot be at all sure that the explanations to which we appeal track the objective relations between interest-independent states of affairs. If objective explanations require objective groundings, then we will have to look elsewhere.

Consequently, if he wishes to ground each of the four causes in an objectively given framework, Aristotle will need to advance some more detailed forms of argumentation. It will not suffice simply to point out that we may tend to be unsatisfied until we have cited all four causes, but then become satisfied once we have. Since he thinks that the four causes are real, objectively existing states of affairs, Aristotle owes some positive argument for this thesis; however natural he (or we) may find the four-causal explanatory framework, Aristotle is not at liberty simply to assume it.

Importantly, he does not. Aristotle argues for each of the four causes. His first and fullest arguments are on behalf of material and formal causation. The primary orientation of these arguments is simple: without matter and form we cannot solve a significant puzzle which we really must solve.

2.3 A PUZZLE ABOUT CHANGE AND GENERATION

Aristotle's predecessors bequeathed him a variety of paradoxes of nature, some rather simple, but others extremely perplexing. One challenging paradox owes to Parmenides, who famously argued that despite what we take ourselves to perceive, *motion is impossible.*[13] Parmenides' student, Zeno of Elea, developed novel arguments on the same theme, arguments so fiendishly difficult in their seeming simplicity that they have required centuries of mathematics to solve them adequately. Parmenides' original arguments, by contrast, are more complex in their background assumptions and are in consequence initially rather difficult to state. For our purposes, it will suffice to provide a formulation of Parmenides close to the understanding Aristotle himself seems to have had. As Aristotle

reports him, Parmenides claims all being is one: 'Because he supposes that beyond being (*to on*) there is no non-being (*to mê on*), he thinks that being is of necessity one and that there is nothing else, (*Meta*. 986b28–30; cf. *Phys*. 185a5–12, 191b36–192a2; *GC* 318b2–7; *Meta*. 984b1–25; 1009b20–25). Although he credits him with having made some progress in difficult terrain, Aristotle believes Parmenides goes seriously awry: not only are his premises false, but even if they were true they would fail to support his conclusion (*Phys*. 185a9–10).

Parmenides begins with the simple insight that, necessarily, whenever anyone thinks of something, there is something *of which* he thinks. Call that something the *object* of his thought. If one succeeds in thinking of some object or other, then what that person thinks exists. Indeed, every object of thought exists – else it could not be thought. Further, heading in the opposite direction, every object of thought is such that it can in principle be thought. Indeed, in general, everything which exists is such that it can be thought; everything which exists is a possible object of thought. Taken together, these two claims form the basis of Parmenides' otherwise odd-sounding suggestion that what is and what can be thought are the same, or, as I will prefer, that what exists and what can be thought are necessarily co-extensive.[14] If you try to think nothing, you invariably think something or other; if you are not thinking anything, then it is not the case that you have succeeded in thinking nothing. On the contrary, you are not thinking at all. Thinking is in this respect *essentially relational*, as is, for example, marrying someone. If you try to marry someone and they decline your overtures, then you have not succeeded in marrying nothing: you have failed to marry altogether.

Now, infers Parmenides, if what exists and what can be thought are necessarily co-extensive, it follows that we cannot think of what does not exist: we cannot, in Parmenides' way of putting the matter, think of non-being. Nor, indeed, can we even speak intelligibly of non-being; for surely we can speak intelligibly only about what we can think.

Now suppose, as some do, that the universe was generated *ex nihilo*, from nothing at all. Apparently, if Parmenides' principles

are correct, those who make this sort of claim must, upon reflection, be speaking nonsense: they are implicated in talking and thinking about nothing. But this is impossible. So, not only are they mistaken in thinking that the universe is generated *ex nihilo*, but they are also, it seems, mistaken even in thinking that they are thinking such a thing. They seem to be in the position of those who suggest that they can think of a round square, even though round squares cannot possibly exist. The person who reports that she is thinking of a round square is either disingenuous, or, if sincere, seriously confused about the contents of her own thoughts. In either event, she is wrong to suggest that she can think of a round square.

So far, then, thinking of absolute generation, generation *ex nihilo*, is impossible. Parmenides pushes his point further by contending that once we agree that we cannot think of generation, or coming into being from what is not, we are similarly precluded from thinking of change at all. After all, whenever we think of change, we implicitly think of what is not. If we suppose that a man learned to play the piano, then evidently we think he did not play the piano before learning. To put the matter in purposely cumbersome terms favourable to Parmenides, let us say that the piano-playing man was *not* before the piano-playing man came into existence – the piano-playing man *did not exist*, was, if you will, a *non-being*, before the piano-playing man was. Therein lies the difficulty: as soon as we think at all seriously about change, we find ourselves implicated in thinking about non-being. Since, however, what exists and what can be thought are co-extensive, we cannot think of non-being; neither, then, it seems, can we think of change. We think we can, but we are deluded, according to Parmenides. We can think of change only if we can think of generation; but we can think of generation only if we can thing of non-being. This, however, we cannot do.

Now, Aristotle thinks that Parmenides' argument is a bad argument. He is right about that, since it has a clear flaw. Still, Aristotle is right to suppose that the argument merits careful consideration. At the very least, we will learn something of value by its consideration. Indeed, what we shall learn, suggests Aristotle, is

that there really are matter and form, as objectively existing features of the world, features existing prior to our subjective explanatory exigencies. Moreover, even when we appreciate Aristotle's solution, we shall find a more intractable if less paradoxical problem following in its wake.

To see why, let us follow Aristotle's judicious methodological precept: 'For those who wish to solve problems, it is helpful to state the problems well.'[15] Here, then, is a formulation of Parmenides' argument *Against Change* (**AC**) which lays bare its essential structure:

1 Necessarily, what is and what can be thought are co-extensive.
2 Hence, it is not possible to think non-being.
3 It is possible to think of generation only if it is possible to think of non-being.
4 Hence, it is not possible to think of generation.
5 It is possible to think of change only if it is possible to think of generation.
6 It is not possible to think of generation.
7 Hence, it is not possible to think of change.

(**AC**-7) provides a direct statement of Parmenides' challenge. His point is not that we cannot *suppose* that we think of change, but rather that when we do, we are mistaken. Imagine for a moment that there is no highest prime number. Suppose further that we nonetheless think, wrongly on our supposition, that we have a proof for the existence of such a number. Our proof is complex and ingenious, but flawed – and necessarily flawed, for in fact, we are now allowing, there is no highest prime. Note, however, that if there is no highest prime, then this fact no cannot be merely contingently true. In that circumstance, we would regard ourselves as thinking of the highest prime, but we would be mistaken in regarding ourselves in that way, and necessarily so. Such, if Parmenides is right, is our situation with respect to change. We think we can think of change, because we think that we experience change as actual; but we are wrong to suppose that we think this way, and necessarily so.

2.4 MATTER AND FORM I: ARISTOTLE'S HYLOMORPHISM

Aristotle's response to Parmenides initiates his defence of the existence of matter and form, objectively construed. His response helps us further to appreciate that matter and form are correlative notions, each one relying for its explication and defence upon the other.

The first point is to draw more explicitly a distinction already implicit in Parmenides' argument, but not drawn with sufficient clarity. (**AC**-5), the claim that we can think of change only if we can think of generation, is really an attempt to reduce one kind of change to another. Let us stipulate that change is any form of alteration whatsoever.[16] Now, we can intuitively recognize that some sorts of change involve the coming into existence of something which had previously not existed, while some other sorts do not. Thus, when a new house is built, after some process of building there exists something where earlier there had been nothing, namely a house. Or, when parents conceive and give birth, a new human being comes into existence where there had been none, namely their child. Call this sort of change *generation*. We suppose that generation occurs not least because each of us believes that there was a time before we were born, before we were conceived, when we did not exist. Contrast generation with a milder form of change, *qualitative change*, which is the sort of change undergone by something already in existence when it somehow alters. Thus, if George Washington goes to the beach for a respite and falls asleep under the bright sun, he comes to be sun-burnt. Later, as the burn fades a bit, he acquires a handsome burnished tan. The right thing to say, evidently, is not that a pale man died, followed by the birth and death of a sun-burnt man, followed in its turn by the birth of a tan man. Rather, George Washington was first pale, and then sun-burnt, and then tanned. He altered, but did not thereby perish. That is, the right thing to say is that generation is not the same as qualitative change. As Aristotle observes, 'Things are said to come to be in different ways. In some cases we do not use the expression "come to be", but rather "come to be so-and-so"' (*Phys.* 190a32–33).

Coming to be so-and-so is qualitative change; simple coming to be is generation.

It is important to reflect on the purport of this distinction for Parmenides' argument against change (**AC**). Evidently, it shows (**AC**-5) to be false, inasmuch as that premise conflates two kinds of change, generation and qualitative change. Thinkers of Parmenides' ilk, says Aristotle, went astray because 'they failed to make this distinction . . . and because of this ignorance they lapsed into still greater error: they thought that nothing beyond what is comes to be or exists, and thus they did away with all generation (*Phys.* 191b10–13). (**AC**-5) is false because it implicitly treats every instance of qualitative change as an episode of generation. Since one may systematically distinguish these, (**AC**) is unsound.

So much, however, does not diagnose the problem which led Parmenides to the conflation. One may state the root problem, implies Aristotle, in a linguistic mode. The problem stems from Parmenides' failure to mark two irreducibly distinct senses of the verb 'to be', corresponding to the two notions of change distinguished. In the case of generation, when we say that something comes to be, we mean that it comes into existence. Call this the existential sense of 'to be'. (We do not use this sense too often in contemporary English, but it is the sense at play in Hamlet's famous soliloquy, 'To be, or not to be . . . ').[17] By contrast, when we speak of qualitative change, we mean that something already in existence comes to acquire or lose a trait, that it comes to have some predicate *F* predicated of it. Call this the predicative sense of 'to be'. Armed with this distinction, we can see, even granting (**AC**-2), the claim that it is not possible to think non-being, we are not entitled to infer that we cannot think of something's changing in the predicative sense. If Washington comes to be sun-tanned, then he comes to be so not from what is not *simpliciter*, but rather comes to be *F* from something that is *not-F*, something which though not sun-tanned is nevertheless something else, something pale. Thus, even granting that we cannot think of non-being, we may nonetheless think of something being *not-F*, when it is *G*. Looked at this way, Parmenides' problem lay in his failure to distinguish *what* is *not-F*, what is not pale, from *what is not*

simpliciter. What is not simpliciter does not exist, while what is *not-F* may nonetheless exist, by being *G*. Hence, even if Parmenides is right that to be and to be an object of thought are co-extensive, what is not may nonetheless be available as an object of thought: what is *not-F* may both exist and be an object of thought by being *G*.

Notably, when proceeding with this sort of diagnosis, Aristotle does not find himself in complete disagreement with everything Parmenides had said. On the contrary, he agrees that there is a reasonable point standing behind Parmenides' argument. After diagnosing a problem with the sort of mistake made by Parmenides and other thinkers of his sort, Aristotle observes:

> We also affirm [i.e. along with these thinkers] that nothing comes to be without qualification from what is not. Nevertheless, we maintain that a thing may come to be from what is not *in a certain way*, for example, accidentally.
>
> (*Phys*. 191b13–15)

Appreciating this concession is key to understanding Aristotle's defence of matter and form.

Once we have removed the threat of Parmenides' argument, we are free to affirm what seems plain to all, namely that there is change. We do experience change. Still, all change, whether generation or qualitative change, perforce involves *complexity*. Since nothing pops into existence from nothing, all change involves something underlying, something which persists even while there is alteration. In the case of generation, when a statue comes into being, the bronze which is fashioned into the statue exists before the change and continues to underlie the statue once it is in existence. In a case of qualitative change, as when an already existing statue is painted by an artist, the statue itself continues to exist. The complex, involved in both kinds of change, put most generally, is (i) something underlying and persisting; and (ii) something gained or lost. These two factors in the change Aristotle dubs (i) *matter* and (ii) *form*. In their most general frameworks, matter is what persists through change, while form is what is gained or lost in an episode of change. In this sense, Aristotle's introduction of

matter and form – and hence of material and formal causation – depends crucially upon the existence of change, a process the existence of which was denied by Parmenides but vindicated by Aristotle's distinction between qualitative change and generation.

Taken together, then, Aristotle's base argument for matter and form (**MF**) is simple:

1 There is change.
2 A necessary condition of there being change is the existence of matter and form.
3 So, there are matter and form.

Aristotle's rejection of Parmenides, together with his concession to him, explains and justifies (**MF**-2): all change involves a complex of factors, something persisting and something gained or lost, which factors are precisely matter and form.

Note that this argument invokes very general conceptions of matter and form, conceptions which will develop and become increasingly refined as Aristotle begins to deploy the framework they invoke, *hylomorphism*, in a series of ever more complex applications. (The name derives from the Greek words *hulê*, or matter, and *morphê*, or form; thus Aristotle's hylomorphism is equivalently, if more cumbersomely, *matter-formism*.) Hylomorphism, in its most basic formulation, is, as we have seen, the view that change involves a complex, with the result that all entities susceptible to change are metaphysical *compounds* rather than simples. We can, consequently, introduce base notions of matter and form, and then characterize Aristotle's most basic conception of hylomorphism in terms of them:

- x is matter $=_{df}$ x underlies change in the acquisition or loss of a form.[18]
- x is form $=_{df}$ x is a positive attribute gained or lost by matter in the process of change.

Note that so far the notions of matter and form are tied both to one another and to a conception of change whose articulation

they have been invoked to underwrite. So, there is some circularity in the notions of matter, form, and change, though this need not be regarded as immediately problematic. We interdefine other core theoretic notions, including, e.g., the modal concepts of possibility and necessity (x is possible $=_{df}$ not necessarily not-x; x is necessary $=_{df}$ not possibly not-x) without loss of clarity or explanatory power.[19]

However that may be, we may now state Aristotle's basic hylomorphism:

- Hylomorphism $=_{df}$ ordinary physical objects are complexes of matter and form.

The point about 'ordinary physical objects' in this definition is rather vague, but it must be included because in due course Aristotle will come to argue for the existence of a being bereft of matter;[20] and he will also allow, in some fashion, the existence of abstractions, including mathematical objects, which are purely formal as well. For now, though, it is easy to think of artefacts and organisms as standard cases of ordinary physical objects. A house comes to be when some matter, some bricks and mortar, are made to realize the form of a house by the activity of a builder. So, the resulting analysis of the constructed house will require that it be a metaphysical complex: we can identify the matter of a house, its bricks and mortar, and, non-equivalently, its form, its shape or structure. Importantly, Aristotle will contend that it is the form which makes the brick and mortar qualify as a house. The same bricks and mortar manifesting a different form would be a different kind of object altogether, for example a pizza oven or a long wall along the border of a Cotswolds estate. A similar account holds in the case of organisms, although the situation now becomes more complex. An organism comes to be when some pre-existing matter comes to realize the form characteristic of that species to which the organism belongs. Thus, so much matter derived from the parents comes to realize the form of humanity, and grows, gaining matter subordinated to the realization of that form, over time. One consequential difference,

according to Aristotle, will be that a living being, unlike an artefact, has its own internal principle of change, its own internal code for development; an artefact, by contrast, is fashioned from without, by the agency of its maker. Still, an organism, no less than an artefact, is a complex, a compound of matter and form.

With that in mind, we can state Aristotle's basic hylomorphism regarding ordinary physical objects, without also worrying about the exact range of physical objects or about the important distinctions Aristotle will eventually draw between the living and the artefactual:

- x is an ordinary physical object $=_{df}$ x is a complex of matter and form such that the presence of the form makes the matter exist as some F.

The form is that whose presence makes the matter what it is; the matter is that which persists through change and underlies the form.

2.5 MATTER AND FORM II: HYLOMORPHISM REFINED AND EXPANDED

The observation that some quantity of matter might now be a house and now be a wall, depending upon what sort of form it manifests, suggests two further fundamental features of Aristotle's hylomorphism. Almost immediately upon introducing the notions of matter and form in the course of his refutation of Parmenides' unsuccessful argument against change, Aristotle observes that another sort of response might equally have served: 'This, then, is one way of solving the difficulty. Another is to observe that the same things can be spoken of in terms of potentiality and actuality' (*Phys.* 191b27–29).[21] He might have appealed to these notions to the same end of refuting Parmenides because there is another way of pointing out the problem with (**AC**-5), the claim that it is possible to think of change only if it is possible to think of generation. So far we have proceeded by distinguishing the existential from the predicative senses of the verb 'to be' and have

conceded that even if it is not possible to think of what does not exist, it is nonetheless possible to think of what is not predicatively F, since we may think of what is not F as what is G, for instance of what is not sun-tanned as what is pale. Another way of putting very nearly the same point is this: we may think of what is not *actually* F, because some actually existing G is *potentially* F, for example some actually pale man is potentially sun-tanned. That is, even if we are prepared to concede that we cannot think what does not exist, we do not thereby allow that we cannot think of something which is actually G but only potentially F. Consequently, again, Parmenides is misguided in his attempt to reduce qualitative change to generation.

Structuring his rejection of Parmenides by relying on the notions of actuality and potentiality permits Aristotle to introduce two further concepts fundamental to his hylomorphism. That these concepts might equally have sufficed for this purpose in place of matter and form already suggests the closeness of the connection Aristotle envisages between the two pairs: (i) matter and form, and (ii) potentiality and actuality. This is a connection he makes explicit in his *Metaphysics*, when he says: 'Matter exists in potentiality, because it may move into a form; and to be sure, when it exists actually, it is in its form' (*Meta.* 1050a15–16). In fact, instead of relying on the notion of change for definitional purposes, we might equally have said:

- x is matter $=_{df}$ x exists in potentiality.
- x is form $=_{df}$ x makes what exists in potentiality exist in actuality.

There are two advantages to proceeding this way. If we accept potentiality and actuality as our primitive notions, then we may define matter and form in terms of them, and subsequently define change in terms of matter and form. That is, we can argue for the existence of matter and form by showing their indispensable role in change, and then in turn show how they may be defined in terms of two other primitive notions, for which we do not argue, namely actuality and potentiality.

Note that proceeding in this way is partly only a matter of expository convenience, but does have the advantage of taking as primitive two further notions, themselves interdefined, which are relatively easy to illustrate. If Cora is not now in love, she is nevertheless potentially so. When she comes to love someone, she has changed somehow and has become actually in love. It is important to note in this connection that Aristotle's concept of *potentiality* is not equivalent to the related notion of *possibility*. When we say that Cora is potentially in love, we mean more than that it is possible for her to fall in love. Rather, she has the real capacity, given the kind of being she is, for loving. Her potentiality thus says more about her than some bare possibility. We may have a dream in which the refrigerator talks to us by flapping its door open and shut, entreating us, 'Come along now, why not have a lovely cheese sandwich? There is also some nice wine in the cupboard.' When we look to the cupboard, it follows suit, but says, 'Don't look at me like that. I cannot talk; I am a cupboard. Fool.' This dream represents what is possible, at least in the sense that it shows us something conceivable; it is precisely the sort of thing that an imaginative cartoonist might represent as actual. Still, in fact, refrigerators and cupboards lack the capacity to speak, and so lack the capacity to tell us that they cannot speak. If we dream of our mother offering us a cheese sandwich, then we dream of someone, our mother, of whom it is true to say that she potentially speaks, and not as a bare possibility. She has this potentiality in virtue of her being a rational being, with a mind, and a mouth and vocal cords – all features wanting in a refrigerator. Potentialities are grounded in real facts and in the actual features of the entities which manifest them.

For this reason, when Aristotle claims that he may equally have appealed to the notions of potentiality and actuality in his refutation of Parmenides, he suggests that his hylomorphism has at its conceptual foundation two further interdefinable concepts, contentful concepts upon which his explanatory edifice rests. He does not propose to reduce these concepts to anything more fundamental. Still, to the extent that they are made clear by illustrations, actuality and potentiality may serve the purposes he foresees for them.

At the same time, the notions of potentiality and actuality introduce a refinement into Aristotle's hylomorphism, one showing a further way in which his concerns about change, even when allayed, can yield surprising consequences. When he confronted Parmenides with his hylomorphic analysis of change, Aristotle conceded something significant, namely that there is no generation *ex nihilo*, that nothing simply pops into existence from nothing at all. Chairs are made from pre-existing wood, statues from bronze, and so forth. Nonetheless, when distinguishing the two kinds of change he accused Parmenides of conflating, namely generation and qualitative change, Aristotle committed himself to two irreducibly distinct kinds of change. In fact, though, given his concession, one might well wonder why he is entitled to do so. If we think that all change, of whatever kind, involves the acquisition or loss of some form by some matter, then how is there real generation? Why, that is, are we precluded from representing the production of a statue or a human being as an instance of qualitative change rather than as a case of *bona fide* generation? If we say that a fence continues to exist when it is painted from grey to white, and thus suffers qualitative change but not generation, then we may equally say that a quantity of bronze alters when it loses its blob shape and acquires its fire-fighter shape. There seems to be no more need to hypothesize real generation in the case of a statue than there was in the case of a fence. In each instance, we have some underlying stuff which persists, the matter – the fence and the bronze. What persists loses one form and acquires another. The fence loses greyness in favour of whiteness, while bronze loses its blob shape when acquiring its fire-fighter shape.

Aristotle's response is to take the first in a series of steps intended to refine and augment his conception of form by making it ever more metaphysically robust. So far, we have thought of forms in the broadest possible terms, as positive traits and as nothing more. This, indeed, is how Aristotle himself first introduced the notion in the context of analysing change. Then we followed him in refining the notion of form slightly, by regarding it in some cases not merely as a positive attribute, but as a positive attribute of a particular kind: as a shape. A shape is a complex

configurational feature, something, we have suggested, whose presence is capable of making a statue what it is. When, and only when, the lump of bronze manifests the shape of a fire-fighter does it constitute a statue of a fire-fighter; when it is molten and recast as a railing, the lump is no longer a statue but a railing. In so speaking, we have implicitly gone part of the way towards Aristotle's first and most important development in his approach to forms.

When confronted with the worry that all cases of generation might be reduced to qualitative change, Aristotle's response is to distinguish two kinds of forms, corresponding to two ways some parcel of matter may be said to be made actual. Aristotle contends:

> Only substances (*ousiai*) are said to come to be without qualification. Now in all cases other than substance, it is plain that there is necessarily something underlying, namely the thing which comes to be [a certain way] . . . But that substances, things said to be without qualification, also come to be from some underlying thing, will be clear to one examining the matter. For there is *always* something which underlies what comes to be, from which what comes to be comes, for instance, animals and plants come from seed.
>
> (*Phys*. 190a32-b5)

Some forms are such that they make a parcel of underlying matter *beings without qualification*, whereas in other cases this does not occur.

A being without qualification is a substance, an *ousia* in Aristotle's language. An *ousia*, literally, 'a being',[22] is the only sort of thing which comes into being, or is generated. Aristotle regards the sorts of forms at play in this sort of change as distinct from the sorts of forms involved in qualitative change. Thus, we may further distinguish:

- x is a substantial form $=_{df}$ x is what makes what exists potentially exist unqualifiedly.
- x is an accidental form $=_{df}$ x is what makes what is potentially F, where F is not a substantial form, actually F.

This formulation takes as basic the notion of existing unqualifiedly, and then defines accidental forms negatively in terms of their not being substantial. Although the idea will receive much fuller treatment,[23] for now it will suffice to say that a being which exists unqualifiedly, a substance, is the sort of thing which does not rely upon anything else for its existence, in the sense that an account of what it is need make no reference to anything beyond the thing in question. A substance is not ontologically parasitic upon any other kind of being. To appreciate what Aristotle has in mind, we might agree, provisionally, that a quantity is not a substance because a quantity is necessarily a quantity *of* something; a quality is not a substance, because a quality is always a quality *belonging* to something; less straightforwardly, a musical man is not a substance, since a musical man depends *upon* the existence of a man for its existence, and not the other way around.[24]

As another first approximation, developing our intuitive thoughts about statues, we may think of a substantial form as the kind of feature whose presence makes a being what it is, and which, when lost, results in that being's ceasing to exist. Accidental forms, by contrast, may come and go without threatening the existence of the beings whose forms they are. To approach Aristotle's distinction between substantial and accidental forms, think first about yourself. Plainly, you could continue to exist if you had one less hair upon your head. Thus, let us say, you at present have an even number of hairs upon your head; if you pluck one, in the interest of solidifying your understanding of the substantial/accidental form distinction, you will find that you still exist, though you have changed inconsequentially. You are now a person having an odd number of hairs upon your head. So, the form, having an even number of hairs upon your head, is an accidental form of yours. By contrast, there are other forms for which this seems not to be true, for example, *being human*. Without arguing for the distinction in the current context, it suffices to note that being human, unlike having an even number of hairs upon your head, qualifies as a substantial form of yours.[25] Without being human, you would cease to exist. In any event, if

you had your molecules scattered throughout the solar system by a fiendish scientist involved in a grotesque experiment, the reasonable thing to conclude would be that you had perished, not that you were now simply spread out. Or, less dramatically, if a glass of wine is poured into the Pacific Ocean, at some point the wine ceases to be wine; the Pacific Ocean does not merely become an unusually diluted glass of pinot noir. In your case, it is reasonable to say that you had perished because the quantity of matter which had realized your human form has ceased to do so. A human form, unlike an accidental form, is the sort of form whose presence makes something existing in potentiality exist unqualifiedly. So, being human is a substantial form, the kind of form which suffices for generation, rather than mere qualitative change.

For these reasons, Aristotle's hylomorphism is simultaneously complicated and enhanced by the notions of potentiality and actuality. When these notions are deployed as ranging over distinct kinds of forms, the substantial and the accidental, we can come to appreciate that substantial forms make matter into something which exists in a basic, non-derivative, independent and unqualified way, whereas the acquisition of an accidental form makes what already exists unqualifiedly change qualitatively without taking anything into or out of existence. If there are substantial forms, then their actual presence explains how generation is possible, even though everything comes to be from some pre-existing matter, as potential.

2.6 THE EFFICIENT CAUSE

Thus far we have been given reason to suppose that matter and form are features of objective explanations: they are the factors in the world explaining change, whether substantial or qualitative. For this reason, we have reason to accept them as objectively existing.

The efficient cause, it is often suggested, needs no such defence. Aristotle identifies a kind of cause which is responsible, as an active feature, for the bringing about of some change. He variously characterizes this cause as *the moving cause* (*to kinoun*), where

his language clearly indicates that intends the kind of cause which *initiates* motion, as the *source of change* (*archê tês kinêseôs*), or simply *what, primarily, moved something* (*ti prôton ekinêse*) (*Phys*. 194b29–32; *GC* 324b13–18; *APo*. 94b233). It is often said that the efficient cause is most like our notion of cause: it is that which brings about visible motion and alteration in the world. We see one billiard ball collide with another and bring about the motion of the second. We can explain the trajectory, speed, and spin of the ball put into motion in terms of the trajectory, speed, and spin of the ball putting it into motion. Aristotle's efficient cause seems precisely this. (Note that Aristotle does not in fact use any Greek term corresponding directly to 'the efficient cause'. The entrenched practice of using this phrase in English arises out of medieval developments of Aristotle's doctrine. Because the developments are themselves unobjectionable, the continuing use of the common English name is warranted.)

The tendency to align Aristotle's efficient cause with our notion of cause may be fine as far as so much suggests, but unless caution is exercised here this practice can be nonetheless doubly misleading. Looking first towards 'our notion of cause', it seems plain that we do not have *a* notion of cause. On the contrary, accounts of causation in contemporary philosophy vary widely, ranging from those which suppose causes to be sufficient conditions, or necessary conditions, or necessary and sufficient conditions, to approaches which treat causes probabilistically, as events which raise the probability of the occurrence of other events to above .5, to contingently related events falling under necessarily related universals, to non-co-incidental events.[26] Philosophers further dispute about whether causation is extensional or intensional;[27] whether it is inherently explanatory or not; whether only events may serve as the *relata* in cases of causation, or whether agents can be causally efficacious; and whether instances of singular causation are possible. In all these ways, our notion of causation is volatile. Accordingly, it is difficult to suppose that there is some common core to all of these accounts, a core which qualifies as *our* notion of cause, as a sort of standard with reference to which Aristotle's efficient cause may be comfortably compared. Moreover,

we have already seen one feature of Aristotelian causation putting him at variance with a widespread if rarely defended assumption in many contemporary approaches to causation, according to which causes are temporally prior to their effects. Aristotle, in contrast to this presumption, treats efficient causes as processes co-temporaneous with their effects.

Looking in the other direction, it will turn out that some of Aristotle's efficient causes can be causes of motion without being themselves in motion. Evidently, for Aristotle, something may serve as a cause of motion without imparting its own motion to its effects, precisely because the cause in question is not in motion. Perhaps this is something we can accommodate in a contemporary framework, though this has been doubted.[28] In any event, this is at least one way in which there is a potential mismatch between Aristotle's conception of efficient causation and some more readily familiar contemporary understandings.

Bearing those provisos in mind, we can allow that those who identify Aristotle's efficient causation as a recognizably causal notion in the way, e.g., that material or formal causes are not, or are not immediately, do have a point. Some paradigmatic cases of efficient causation will equally count as paradigmatic for several widely endorsed contemporary approaches to causation.

One further point of contact is this: Aristotle does not think it is especially worth his while to argue that there are efficient causes. In this way, he is like the vast majority of contemporary philosophers who wrangle about the correct analysis of causation without stopping to argue *that there are in fact causes operative in the world*; they agree that there are causes, but then disagree about how those causes are best to be understood. In Aristotle's case, any suggestion to the effect that there are no efficient causes is tantamount to the claim that there is no motion. Hence, in effect, any claim in this direction is a challenge to the first premise in Aristotle's argument for the existence of matter and form, (**MF**-1), the simple claim that there is change.

Aristotle displays a bit of impatience with those who adopt such postures, partly because he accepts the existence of change as a datum to be explained and not as a conjecture to be contested:

'To maintain that all things are at rest, and then to seek an account of this by disregarding sense perception would indicate feebleness of mind' (*Phys.* 253a322–24). Still, he does not refrain from addressing the critic in question by means of a potent counter-argument. We will all agree that it *seems*, according to sense perception, that there is change. Surely, in any event, it seems undeniable that we seem to experience change. If you pick up this book and toss it in the rubbish bin, then you will see it move through the air, thus changing its location; if you leave the book unread on the desk before you, but blink while looking at it, then you experience change in your visual field; indeed, even if you see it before you without blinking, and consider reading it but then decide against, you have just been the subject of a series of mental changes. If someone denies resolutely that we *seem* to experience change, then although we cannot refute her directly, we would do well to cease chatting with her, setting her aside as someone who is obstinate for the sake of obstinacy. After all, even Parmenides agreed that there seems to be change; this is why he felt the need to advance so uncompromising an argument for his surprising denial of the existence of change.

Now, suggests Aristotle, if someone agrees that we seem to experience change, but believes that she has an overpowering argument to the contrary, then she is enjoining us to imagine that the world is not at all as it seems, and thus, overcome by the crushing power of her argument, to amend our beliefs accordingly. In such an eventuality, queries Aristotle, are not mental alterations, including episodes of imagination and belief formation, themselves changes? Aristotle contends they are (*Phys.* 253a32-b6, 254a23–31). So, if the detractor of change enjoins us to change our belief about what seems to be the case, viz. that there is change, then she enjoins us to do what she says cannot be done, namely *change* our minds. Hence, her request is self-undermining and incoherent. If the critic retorts that she is not enjoining us to do any such thing, then, of course, we have no reason to respond to her: she, having said nothing, merits nothing in response. Taking all that together, if the critic denies that there seems to be change, there is nothing further to say. If she agrees

that there seems to be change, but supposes that any belief to this effect is systematically mistaken, then she exhorts us to do what she denies we can do, namely *change* our thinking. In that case, however, she advances an immediately self-enfeebling claim.[29]

Consequently, we remain perfectly justified in asserting what we know to be true, that there is change. If there is change, however, then there seem to be causes of change. The alternative, certainly a logically possible one, is to suppose that changes occur uninitiated. If we are disinclined to accept that expedient, then we are prepared also to agree that there are efficient causes, as mind- and language-independent features of the world, features which, consequently, require recognition in any account of explanatory adequacy.

2.7 THE FINAL CAUSE I: PROBLEMS WITH ARISTOTLE'S COMMITMENT TO TELEOLOGY

We habitually ascribe final causes to actions, events, and artefacts, even if we do not do so self-consciously or by that name. Why did she stop at the organic food store? She did so *in order* to buy organic milk. Why was there a large rally and protest march in London? People marched *so that* they could make their opposition to the murderous and unnecessary war known. To revert to our earlier example, why is there a statue high in the mountains? It was placed there *in honour of* the fire-fighters who fell while trying to combat a raging inferno.

Do we say, though, that the inferno was itself *for* anything? Here opinions divide. In some instances, we may say that we have a complete explanation without any appeal to final causation, as when we discover that the fire was caused by some careless scouts who neglected to douse their campfire before breaking camp. Sometimes, though, we think otherwise, as when, for instance, we learn that the fire was deliberately set by an out of work fire-fighter hoping for gainful employment. In this case, we may say that the fire was intended to serve some purpose, namely that of creating economic opportunity. Sometimes, more tendentiously, one reads ecologists asserting that forest fires have been only

wrongly suppressed by natural park managers, because nature regulates the health of the forests via a cycle of growth, destruction, and rebirth. Forest fires, they say, are *for the sake of* healthy forests, where health needs to be considered in time frames outstripping the interests of blinkered humans and their local preoccupations.

When we appeal to final causes, we may, as in appeals to other kinds of causes, be right or wrong, justified or unjustified. If we say that the woman stopped at the store in order to buy organic milk when she in fact went there in order to meet a double agent posing as an organic shopkeeper, then we are wrong, because we have cited the wrong final cause. There is a strong tendency, however, to suppose that there is another sort of problem, a deeper, more distressing mistake associated with Aristotle's notion of final cause: would it not be preferable to avoid speaking in terms of objectively existing states of affairs as explanatorily efficacious final causes by referring instead to an agent's beliefs and desires as efficient causes? Why, that is, refer to some end-state as a cause, when we can equally, and preferably, refer to a subject's antecedent beliefs and desires as the causes of her action? Indeed, suppose in the case imagined that there is no double agent, that the woman is delusional. Should we cite a non-existent meeting with a non-existent double agent as the final cause of a woman's going to the organic shop? There seems to be nothing available to cite. Aristotle's explanations were supposed to be objective, but here there is no object in view.

In fact, there are two distinct forms of complaints lodged against Aristotle's notion of final causation, no matter how innocuous and prevalent our practice in appealing to them may be. Firstly, it is thought, final causes are merely convenient fictions and as such are dispensable because reducible to other more routine kinds of causation.[30] Secondly, and more strongly, it is urged that such talk *must* be dispensed with, because the notion of final causation is worse than explanatorily vacuous: it is positively incoherent.

In view of these sorts of charges, Aristotle owes a defence of teleological causation, especially given his contention that for a

broad range of cases, an objective explanation is incomplete without an appeal to a final cause. Interestingly, although it is often suggested that the rise of quantitative science doomed teleological causation, Aristotle was already faced with an analogous objection in his own day.

> There is a puzzle in this: what precludes nature's acting not for the sake of something, nor because something is better, but of necessity – rather, just as Zeus's rain falls, not in order to make the grain grow, but of necessity? For it is necessary that what has been drawn up is cooled, and that what has been cooled and has become water comes down; and it is co-incidental that this makes the grain grow. Similarly, if someone's grain is spoiled on the threshing floor, it is not the case that it rains in order for the grain to spoil. Rather, this occurs co-incidentally.
>
> (*Phys*. 198b16–23)

Aristotle envisages an objection to final causation, given in terms of natural necessity. Why not speak simply and exclusively in terms of the natural material necessities and nothing more? If every explanation can in principle be given in terms of natural necessity, then perhaps it will be simply superfluous to appeal to final causes. In the face of this concern, Aristotle sees the need to advance a defence of teleological causation.

To appreciate Aristotle's defence, let us begin with an example sympathetic to his approach. Suppose while walking on a remote beach we come upon what appears to be an artefact, but of what sort we cannot say. It has a white, conical shape, with wires and silicon chips within, all connected to a central component board of some sort. While we acknowledge that it might be something created spontaneously, by a freakish natural event, we are nevertheless perfectly justified in thinking of it as an artefact. We know, in Aristotle's terms, its material cause, because we have analysed it. It is so much copper, silicon, and plastic. Suppose, moreover, now somewhat incredibly, that walking further along the beach we come upon a factory full of large robotic devices producing artefacts of the kind we have already found, though we can find

no-one to explain to us what the artefact is. No-one is attending the robotic machines, which simply mould, assemble, finish, and package the items in question. Now we are completely sure that we have an artefact before us, and we have uncovered its efficient cause. Further, in the most general and thin notion of formal cause, we have appreciated its form, its structure or shape. Still, we do not know *what it is*. The only thing lacking in our understanding seems to be some other kind explanatory factor. This factor Aristotle calls the final cause.

When at long last we discover an instruction manual in the bottom of one of the packages into which the item is robotically placed, we learn that the artefact is an AirPort Extreme wireless transmitter, used to broadcast the internet to computers with appropriate WiFi cards installed. Now, and arguably only now, do we have an explanation of the artefact: only when we ascertain its *function*, only when we know *what it is for*, only, that is, when we have grasped its final cause, do we have the explanation we were seeking.

So far, perhaps, no-one should disagree. After all, we know how the transmitter came to have the final cause it has: we gave it its function, and this function is *what it is for*. Finding ourselves with some need or desire, we developed a tool, a sophisticated tool, made of just the right suitably sophisticated stuff, and pressed it into our service. In general, there can be no interesting question about whether artefacts have final causes in Aristotle's sense. Note, however, that he has a much broader role for his final causes to play: he wants to show that final causes are operative 'in nature', where the natural contrasts with the realm of the artefactual. Thus, he claims:

> As things are in action, so they are in nature; and as they are in nature, so they are in action, so long as nothing interferes. But action is for the sake of an end. So, natural things are also for the sake of something. For example, if a house were to come to be by nature, it would come to be as it in fact now comes to be by craft. And if things which come to be by nature came to be not only by nature but also by craft, then they would come to be just

> as they do by nature – one thing would come to be an account of another . . . If, then, things coming to be in accordance with a craft are for something, clearly so too are things coming to be in accordance with nature. For later stages are related to earlier among things coming to be in accordance with nature just as they are among things coming to be in accordance with a craft
>
> (*Phys*. 199a9–20)

In this passage, Aristotle asserts that we have the same reason to ascribe ends to items in nature that we have in the case of artefacts: we see certain things fitted to tasks of various sorts, such that those tasks explain their structures. We see eyes fitted to animals for the purpose of navigating, which involves their using light and colour detectors, which in turn explains the internal structures of their eyeballs. In such cases, it seems plausible to Aristotle that we should want to appeal to function to explain structure. Still, importantly, in the realm of nature, there is no designer available. Consequently, he wants to argue that some entities have final causes even though they were not given those causes by the activities of conscious designing agents to whose interests the functions in question owe their existence. Paradigm instances of designerless function-laden entities are the parts of animals. Moreover, whole animals, indeed all living beings, according to Aristotle, have final causes. This, of course, includes us. *We* have final causes, though no-one has given them to us.[31]

In order to understand how Aristotle builds to this conclusion, it is imperative to see first that he contends that it makes perfect sense to speak of at least some entities as sporting final causes even though they have not been designed by any conscious agent. He claims, for example:

> It is odd for some to suppose that things do not come to be for the sake of something unless they see an agent deliberating. After all, art does not deliberate. If the ship-building art resided in wood, it would produce its same results by nature. Consequently, if that for the sake of which is present in art, it is also present in nature. This is made most clear when a doctor doctors himself:

> nature is like that. It is plain, then, that nature is a cause, and indeed cause of this sort: a cause for the sake of something.
>
> (*Phys*. 199b26–33)

So far, his defence is limited, removing only one fairly inconsequential impediment to supposing that final causes are operative in nature. We see civic planners and engineers deliberating about how to design the items in their spheres, but we never see nature pausing to wonder whether kidneys are optimally suited for filtering blood. Aristotle's response is that we can very often observe actions done for the sake of some end even though no deliberation has preceded them. That what he means when he speaks of a doctor doctoring himself: being an expert in his craft, and knowing his own symptoms from the inside, he can, in some cases does, move immediately to the cure without having first to consider various options available to him. Still, he acts for the sake of curing himself. Similarly, musicians do not stop to deliberate in the middle of a performance about which violin string to press. Arguably, their doing so would ruin their performance. When they play, they deliberately press the G-string in order to produce a sound, one component of a melody, which is their ultimate objective. Here too deliberation is not a necessary condition of their acting for the sake of some end. Accordingly, infers Aristotle, a lack of deliberation is compatible with the presence of teleological causation. Hence, lack of deliberation is compatible teleology. Consequently, it is no bar to the existence of final causes in nature that nature never deliberates.

That may seem fair enough, as far as it goes, but it hardly goes far enough. Presumably, someone who doubts that final causes are present in nature is impressed by more than the fact that nature does not deliberate. Doctors and violinists act for ends without deliberating, but they, unlike nature, do have minds. Moreover, doctors and violinists act without deliberation because of their long practice and habituation, all of which involves a great deal of deliberation. Nature is thus in a salient way unlike a doctor doctoring himself or a violinist performing a sonata. Nature, unlike these kinds of agents, is not minded at all; nature is

not a being with intentional states. There is an obvious reason why computers have the functions they have: they were designed to have them by creatures with intentionality. No such creature designed our teeth. The reason doctors do not deliberate at some times before acting is because they have earlier deliberated well and have developed entrenched habits of informed acting. If nature acts without deliberation, this is not because it acts from a well-established pattern of spontaneous action given rise by protracted deliberate intentional attention at an earlier time.

Aristotle's response is two-fold. Initially he offers an argument which should strike us as uncompelling. Subsequently, though, he appeals to some deeper and more engaging sorts of considerations.

To appreciate his first argument, it is useful to see that he may be understood – and seems to have understood himself – as positioned between two extremes: those who see no purpose in nature whatsoever and those who see purpose only where there is design. Let us call the first sort of theorists *teleological eliminativists* and the second sort *teleological intentionalists*. Teleological eliminativists simply deny that purposes are present anywhere in nature: if we think that our kidneys are *for* filtering blood, or that bees dance *in order* to warn their swarm-mates of the presence of predators, or that fancy plumage *serves the end* of reproductive fitness, then we are sorely mistaken. Such eliminativists were known to Aristotle in the figures of Empedocles, Democritus, and Leucippus. Teleological intentionalists, by contrast, might or might not find purpose in nature; it is just that they will find it there if and only if there is a designer of the universe who has given nature or its parts purpose. A teleological intentionalist may well, then, find nature acting for the sake of some end, may think that our eyes are *for* detecting light, but only because we have been marvellously outfitted by the providential God who created the universe. Although the parallel should not be pressed too far, one figure known to Aristotle, Anaxagoras, tended in the direction of teleological intentionalism.

Aristotle seeks a middle course between teleological eliminativists and teleological intentionalists. As he sees the matter, teleological eliminativists deny purpose where it exists, whereas

teleological intentionalists restrict purposiveness unduly by finding it only in relation to designing intelligence. He contends that eliminativists can offer only impoverished and incomplete explanations, whereas intentionalists import more than is required for adequacy in explanation. He argues most stridently against the teleological eliminativists, giving less thought to the intentionalists. Still, it is worth appreciating that if his argument against the eliminativists is persuasive, then the alternatives remaining seem to be either intentionalism or his own preferred, non-intentional, non-eliminative realism about teleological causation in nature.

Against the eliminativists, Aristotle considers the hypothesis that perhaps everything in nature happens by necessity. We say that puddles in the street evaporate due to the dryness of the air, that when enough moisture collects in the atmosphere, water condenses, clouds form, and rain falls. If the rain falls on our holiday parade, thereby spoiling all of our fun, we would be foolish to insist that the rain fell *in order* to ruin our day. The cycle of rain, evaporation, condensation, and rain happens of necessity, and not for the sake of anything. Perhaps we should view all of nature this way: everything happens by material necessity, with the result that appeals to final causation have no purchase. In response to this sort of posture, Aristotle begins by noting something obvious, that we do not begin the day supposing that there is no purpose anywhere in nature. On the contrary, in some corners of nature, we unreflectively speak as if purpose were present. Consider the organs of human beings. We think hearts are *for* pumping blood, that teeth are *for* tearing and chewing, that kidneys are *for* filtering blood, and that, by contrast, the appendix may have lost its function is merely vestigial. When considering those who simply deny purpose in any of these connections, Aristotle claims, stridently, 'It is not possible that things should really be this way' (*Phys.* 198b33). Unfortunately, as suggested, his initial argument for this conclusion does not provide him the support he requires. He claims:

> For these [viz. teeth and all other parts of natural beings] and all other natural things come about as they do either always or for

> the most part, whereas nothing which comes about due to chance or spontaneity comes about always or for the most part. . . . If, then, these are either the result of co-incidence or for the sake of something, and they cannot be the result of co-incidence or spontaneity, it follows that they must be for the sake of something. Moreover, even those making these sorts of claims [viz. that everything comes to be by necessity] will agree that such things are natural. Therefore, *that for the sake of which* is present among things which come to be and exist by nature.
>
> (*Phys*. 198b32–199a8)

In saying that even those insisting that everything occurs by material necessity will allow that the items in question – teeth and various other naturally occurring phenomena – come about by nature, Aristotle signals that he is concentrating on teleological eliminativists, and setting aside for the present teleological intentionalists. Against the eliminativists, he suggests that it is simply implausible to suppose that features which provide benefits over and over again occur by chance. Should we think that it is simply happenstance that our kidneys show up by chance over and over again, generation after generation, ever suited to filter blood? That seems problematic: if a man meets a woman after work for 150 days running, sometimes in the café, sometimes in the grocery shop, sometimes in a pub, and sometimes in a motel lobby, we should be hard pressed to accept that suggestion that they have just chanced to meet, by accident, 150 times in a row. Rather, their meetings are for the sake of something: their meetings have a final cause.

The argument may have a superficial plausibility, but when it is examined more closely, it is seen to be unacceptable. Aristotle's first argument for teleological causation (**ATC**), in schematic form is:

1 Natural phenomena exhibit regularity, occurring 'always or for the most part'.
2 Things happen either by chance or for the sake of something.
3 What happens by chance does not exhibit regularity; chance events do not occur 'always or for the most part'.
4 So, natural phenomena occur for the sake of something.

Hence, (**ATC**) concludes, if the eliminativists reject final causes on the grounds that they are inoperative in nature, their explanations are incomplete.

The most obvious problem arises with respect to (**ATC**-2), which is evidently intended to be an exclusive and exhaustive disjunction. In any event, if it is not so construed, then the argument is formally invalid. If this is correct, however, then (**ATC**-2) leaves no room for regularities which are neither accidental nor purposeful. Unfortunately, there are such, with the result that (**ATC**-2), thus interpreted, is false. For instance, as my heart pumps blood, it also thumps. This is a clear regularity, but it is neither purposeful nor accidental. On the contrary, though there is a nomological, or law-governed, connection between muscle contraction and noise, my heart does not beat in order to make a thumping noise. When we fly in aeroplanes, we predictably, because regularly, engage in an activity which pollutes the atmosphere. This too is nomological and not accidental. Still, no-one flies *in order* to pollute the atmosphere.

These sorts of examples are readily multiplied. They are instances of regularities which are not susceptible of teleological explanations. They show, therefore, that (**ATC**-2), interpreted as an exclusive and exhaustive disjunction, is false. Yet if it is not taken this way, the entire argument is formally invalid. Hence, taking all that together, either (**ATC**-2) is false and the argument is unsound or (**ATC**) is formally invalid. In either case, then, (**ATC**) is unsound.

That said, it is surprising that Aristotle should assent to (**ATC**-2), as he undeniably seems to do. For in his biological writings, he is himself keen to point to countless instances of non-purposive regularity (*PA* 676b16–677b10, *GA* 778a29–b6). So, it would be unfair to allow the matter to rest there. Perhaps, then, he is assuming that in cases where we have non-teleological regularities, this is due to there being underlying teleological causes. Thus, for example, if a heart is for pumping blood, and its pumping nomologically necessitates its making noise, then its noise-making is epiphenomenal upon its pumping.[32] In that case, (**ATC**-2) could be re-written as:

(**ATC**-2*): Unless epiphenomenal, things happen either by chance or for the sake of something.

Such a restructuring, however, seems problematic. So far, at any rate, the eliminativists will rightly be unimpressed with an appeal to epiphenomenalism; for the features in question seem to be epiphenomenal only on the final causes whose existence is currently in dispute. Minimally, it would be dialectically awkward to proceed along these lines. That is, we are in the process of wondering whether various features are for the sake of something. To insist *that circulating oxygen for the sake of the organism* is not an epiphenomenal regularity of a heart's beating, while its making a thumping noise is, seems already to presuppose that some regularities are indeed for the sake of something. That, however, is just what the eliminativist doubts. Moreover, such a response seems only to postpone the problem, since there also seems to be non-epiphenomenal, not-accidental regularities, which are nonetheless not for the sake of anything. For instance, a man who leads a meticulously scheduled life might walk his dog in Reading at 5.20 in the morning at the exact instant the Oxford to London morning train pulls into the Reading station. Perhaps he is so punctual that those who commute to London on the train come to rely on his presence to indicate whether they are on time as they arrive at the station. The events in question are not epiphenomenal, but also non-accidental, since each, in its own sphere, is so perfectly regular. If that is so, however, then an eliminativist still need not be impressed with this argument, since (**ATC**-2*) fairs no better than the original (**ATC**-2). Consequently, (**ATC**) is not immediately promising as directed against the eliminativists.

2.8 THE FINAL CAUSE II: TELEOLOGY EXPLORED AND GROUNDED

It would be a shame if the matter were to rest there. First, as becomes clear from studying his work, Aristotle adverts repeatedly to the final cause as an explanatorily fundamental principle. In subsequent chapters we shall find appeals to teleology cropping

up in his physics, his metaphysics, and his psychology, as well as his ethical theory, politics, and theory of rhetoric; indeed, his theory of tragedy is routinely misunderstood by those who fail to grasp its teleological moorings. If the entire edifice of Aristotle's philosophy rests upon an unmotivated and indefensible commitment to teleological explanation, then our interest in his thought could be at best antiquarian. Second, and more immediately, Aristotle's defence of teleology is in fact not encapsulated in this single passage of the *Physics*, which has captured a disproportionate amount of scholarly interest. In fact, he provides additional support in other passages, some of it much more complex and metaphysical in character than we have encountered so far, but also much less problematic. For these reasons, Aristotle's defence of teleology merits further consideration.

Towards this end, it is important to begin by noting that whether or not any variety of Aristotelian teleology remains viable today in any sphere, many of his detractors are alarmingly wide of the mark in the target of their criticisms. The fact is that Aristotle simply did not subscribe to most of the views ridiculed in his name. To take but one typical example, the American behaviourist psychologist B. F. Skinner reports, bewilderingly, 'Aristotle argued that a falling body accelerated because it grew more jubilant as it found itself nearer its home.'[33] As Skinner would have it, Aristotle held to the belief that a rock rolls down a hill because it rejoices in moving downwards and grows ever more animated as it approaches its destination. Aristotle's rocks, according to Skinner, have feelings and thoughts about their proper place in the cosmos – attitudes sufficiently sophisticated that they manifest complex propositional attitudes which bring them joy and spur them to act in ways determined to secure their ends. Perhaps the silliness of this perversion would not be worth recounting if it were merely aberrant. Unfortunately it is not.[34]

Other criticisms are not so obviously wide of their mark; and it is incontestably true that some of those at the forefront of the rise of modern quantitative science saw themselves as superseding a version, however attenuated, of Aristotelian teleology. Boyle, for instance, contends: 'The treating of final causes in physics has

driven out the inquiry of physical ones, and made men rest in specious and shadowy causes, without ever searching in earnest after such as are real and truly physical. And this was done not only by Plato, who constantly anchors upon this shore, but by Aristotle, Galen, and others.'[35] Interestingly, many of the figures of the early modern era critical of blind teleology of nature at the same time embraced a kind of intentionalist teleology, according to which the natural universe should be understood to be an orderly manifestation of God's plans. Thus, Newton maintains: 'We know [God] by his most wise and excellent contrivances of things, and final causes . . . Blind metaphysical nature could produce no variety of things. All that diversity of natural things which we find suited to different times and place could arise from nothing but the ideas and will of a Being necessarily existing.'[36] Even now, when it is easy read Newton's appeals to final causation achingly pre-Darwinian, it bears emphasizing that many contemporary critics of Aristotelian teleology rely upon precisely his intentionalist presuppositions.

The point of recounting some of these authors is not to gain some *ex authoritate* credence for Aristotle's teleology. On the contrary, that we find serious thinkers disagreeing about the character and value of Aristotelian teleology only commends a closer look at Aristotle's own position on the matter. Some have rejected Aristotle for treating inanimate nature as intentional; others have faulted him for supposing that if nature itself is not intrinsically intentional, it must – given the presence of final causes in nature – be ordained by a providential god; and still others have found fault with his countenancing final causes of any kind, in any domain. Minimally, Aristotle could hardly be guilty of so many sins simultaneously.

In fact, as we have already seen, Aristotle himself wants to find a middle way between teleological eliminativists, who reject all appeal to teleology, and intentionalists, who find teleology only where it is the result of conscious design. Looked at from even a distant remove, Aristotle is right to observe that eliminativists seem extreme. Surely we recognize *some* instances of teleology operative in the world. Presumably, when Aristotle seeks to illustrate

the teleology of nature in terms of a doctor doctoring himself, it is because he takes it for granted that human actions are for the sake of something. As he asserts without argument at the beginning of the *Nicomachean Ethics*, 'Every craft and every inquiry, and similarly every action and choice, is thought to aim at something good' (*EN* 1094a1). Plainly, when builders move lumber around on a building site, cutting it, fixing it, and shaping it in determinate ways, it is *for the sake* of building a building. The craft of house-building aims at building houses; and when builders act they have in view some end, namely a complete house. So much seems almost too obvious to state. Yet humans are parts of nature; so parts of nature exhibit final causes.

Further, if crafts and actions have ends, then we explain those crafts and actions in part by appealing to those ends. What explains a builder affixing a large beam across two others is that the house needs support if it is to stand. Now, the eliminativist, who austerely rejects *all* appeal to teleological causation, needs to deny that such appeals have any role to play in the explanation of the activity we observe. That much does seem extreme, and needs some sort of powerful argument if it is to be taken seriously, an argument showing that any appeal to goal-directedness is incoherent, or that all purposive explanation is as such somehow outmoded or incomprehensible.[37] Without this, it seems reasonable, supposes Aristotle, to proceed in our normal ways of understanding human action. Looked at in this light, Aristotle's initial appeals to teleological explanation receive no argument from him, because he thinks they need no argument. All we really need is ostension, or simple demonstration: we may simply *point* to the forms of explanation we habitually give of human actions and note that they are patently teleological in character.

If it puts pressure on the eliminativist, ostension of this sort is perfectly agreeable to the teleological intentionalist. She has no problem with teleological explanation as such, but rather with appeals tending to move it beyond the realm of intentionality;[38] from her perspective, teleological explanation is unobjectionable, so long as intentional agency is in play. As an historical matter, neither the intentionalist nor the eliminativist has captured Aristotle's

actual position, which was well stated already in the nineteenth century by the German scholar Zeller: 'The most important feature of the Aristotelian teleology is the fact that it is neither anthropocentric, nor is it due to the actions of a creater existing outside the world or even of a mere arranger of the world, but is always thought of as immanent in nature.'[39]

As a philosophical matter, it remains to discover how, and how well, Aristotle seeks to ground his pervasive teleology. So far, we have seen that one of his central arguments has come up short.[40] As we shall see, however, this argument hardly exhausts Aristotle's defence of this form of causation. In order to see how he proceeds, and given the range of views voiced regarding teleology's role in explanation across a variety of domains, it is instructive to construct a ladder of teleology, built with the sorts of examples Aristotle deploys, in order to determine how high one might wish to climb. Aristotle climbs to the top, but does so without the aid of the intentionalism or animism so often ascribed to him. The ladder begins with two paradigm cases, human-designed tools and human agency, which all but the austere eliminativist will accept without hesitation:

i Tools are *for the sake of something*, namely the functions they were given by deliberative agents.
ii Deliberative actions are *for the sake of something*, namely the goods sought by the agent.
iii Non-deliberative actions, whether of humans or non-human animals, are for *the sake of something*, namely the good pursued by the actor.
iv The parts of living systems, e.g. the eye or the kidney, are *for the sake of something*, namely the *function* they play in the organic systems of which they are parts.
v Organic systems, e.g. animals and plants, are *for the sake of something*, namely their own intrinsic goods.

By the time we reach (v), which is an appeal to a non-derived free-standing teleological explanation, the intentionalist is clearly no longer on board. Where, though, does she stop climbing?

Presumably, (iv), which involves an appeal to a systemically derived teleology not grounded in intentional action, is already discomfiting to the intentionalist. Still, if it can be shown that (v) is defensible, then (iv) should likewise be unobjectionable. This is Aristotle's tactic.

Looking further down the ladder, it seems safe to assume that the intentionalist has no difficulty with (i) or (ii). The next step may seem in one way innocuous, but once one appreciates the sorts of examples Aristotle has in view, then the step from (ii) to (iii) may prove more objectionable than first appears. Two sorts of cases strike him. Just after noting that in nature no less than in craft we seem to have ends ordered in hierarchies, he observes:

> This is most obvious in the case of animals other than man: they make things using neither craft nor on the basis of inquiry nor by deliberation. This is in fact a source of puzzlement for those who wonder whether it is by reason or by some other faculty that these creatures work – spiders, ants and the like. Advancing bit by bit in this same direction it becomes apparent that even in plants features conducive to an end occur – leaves, for example, grow in order to provide shade for the fruit. If then it is both by nature and for an end that the swallow makes its nest and the spider its web, and plants grow leaves for the sake of the fruit and send their roots down rather than up for the sake of nourishment, it is plain that this kind of cause is operative in things which come to be and are by nature. And since nature is twofold, as matter and as form, the form is the end, and since all other things are for sake of the end, the form must be the cause in the sense of that for the sake of which.
>
> (*Phys*. 199a20–32)

We say that the swallow builds its nest in order to breed its young; in the same vein, we say that spiders spin their webs in order to trap their prey. In neither case do we find deliberation; nor are ants or spiders conscious in any robust sense of the term. From there, suggests Aristotle, it is a small step to think that plants put their roots downward *for the sake of* nourishment. This is the

sense in which botanists make free use of intentional vocabulary in speaking, for example, of xyrophytes and phreotophytes and other desert plants as 'ingenious' and 'innovative' in the way they send their roots out to acquire water. These botanists are impressed by such plants, describing them as engaging in end-directed strategies, though of course without ascribing to them the sorts of internal mental representations required for the deployment of a literal strategic plan. Just so, thinks Aristotle: they engage in end-directed behaviour though they are neither deliberative nor conscious agents. In the case of such plants, we appeal without apology to their engaging in non-intentional teleological behaviour. If we have crossed that gulf, we have moved from (ii) to (iii), with the result that any move from (iii) to (iv) should now prove relatively unproblematic, at least for the (former) intentionalist.

Still, even if we were to grant that much, we might yet doubt (v), whereby self-contained intentional systems are held to have *non-derived* or *native* ends. Thus far, at any rate, it has been possible in each case to think of final causes as in one way or another *derivative*, if not from intentional design then at least from a functional role played in an overarching system. Still, if the kidneys serve the ends of the whole organism by purifying blood, then the whole organism has its end either as derived or intrinsically. If the organism has an end, then it is either from a system larger than itself, to which it plays some subordinate role, or by the agency of a conscious external designer, perhaps some creative god – so that organisms turn out to be surprisingly artefactual after all. The other alternative, Aristotle's, has it that organisms have their ends neither by subordination to any larger system nor by the agency of a conscious designer, but rather intrinsically, in a non-derivative way. Indeed, Aristotle resists the suggestion that organisms derive their ends from the larger environment in which they find themselves. This is understandable, since we would have in that event mainly a strategy of postponement. Eventually, if we are non-intentionalists, then there must be some ground for final causation which is neither intention-dependent nor system-derived. Aristotle suggests that the level of the organism is the right place to stop.

What can be said on behalf of this suggestion? First, it is imperative to appreciate that Aristotle's dominant examples of systems of non-derived teleology are organisms – that is, living systems. Every living system, he supposes, is essentially living – is such, that is, that it ceases to exist when it ceases to live (*DA* 415b13).[41] To the extent that it makes sense to ask of every living system whether it is *flourishing*, it also makes sense to begin thinking of it as having a non-derived end, precisely insofar as it is living. Thus, a healthy heart is one which discharges its function relative to the animal whose heart it is; but the animal's being healthy seems to involve no further appeal, since it is not healthy relative to anything else, but rather in itself.

Finally, in what is his most complex and metaphysically intricate defence of teleological causation at the level of the whole organism, Aristotle appeals to some facts about the metaphysics of growth. To appreciate the sort of point he has in mind, suppose that you and I are soldiers in a platoon, and as punishment for being slackers our sergeant orders us to dig two holes, one each, no less then four-feet deep. When we finish, he then orders us to get rid of the two piles of dirt we have created, saying that he does not want to see either pile anywhere within fifty metres of the perimeter of our camp. Now, when you take a coffee break, I simply shovel my pile onto your pile, claiming when you return that my pile is now gone, whereas yours has got a lot bigger. Since mine is now gone, and nothing can be made to begin to exist twice, there is nothing you can do to restore my pile to me. You take issue, and call me a sophist. You deny that your pile has got any bigger, claiming that it is in fact impossible for anything ever to get bigger. You support this improbable claim by contending that your pile – like every other material being – is nothing more than an aggregate of molecules of earth, and it is what it ever was, just that aggregate. All I have succeeded in doing was moving my aggregate very much closer to yours.

Our argument seems to be about the identity conditions of material objects, whether at a time or through time; and the problem we are having stems from the fact that there are no clear identity conditions for piles of dirt. Now transfer the case to

organisms. Suppose that after we resolve our difficulties about the dirt we go out to dinner. After we begin eating, you head to the bar to order a drink. When you do, I take your mound of potatoes off your plate and eat it, having already finished my own. When you return and complain, I try to use your own argument against you. I say that I have not eaten your mound of potatoes, that it in any case still exists, that if I had eaten it, I would have got bigger, but, as you say, nothing ever gets any bigger. It is true that I have moved your mound of potatoes closer to my mound by putting it into my stomach next to mine; but it exists as it ever did, even now. If you back-pedal from your earlier point and now insist that things do in fact get bigger, I will perhaps agree, and respond that it is your mound of potatoes which has got bigger, a lot bigger, while the person who took the mound off your plate has gone out of existence. Since I am consequently certainly not that person, it is unfair of you to chastise me for something I did not do. Indeed, since I am a now not a person at all, it would be positively absurd of you to find fault with me. Surely you do not wish to scold a potato-appendage.

In all of this there is, suggests Aristotle, a serious philosophical point: it is a non-conventional fact that organisms get bigger, by growing, which they do by accretion, subordinating ambient matter, food, to their own ends. Note, however, the appeal to *ends*. You and I have been talking about piles and organisms as if they were on a par, treating organisms as if they were mere aggregates, and conventionally determined at that, as if it were somehow up to us to determine which of two things gets bigger when material bodies interact. This is not so in the case of growth:

> One might raise a further difficulty. What is that which grows? Is it that to which something is added? If, e.g., a man grows in his shin, is it the shin which grows, but not that whereby he grows, not, that is, the food? Then why have both not grown? For when A is added to B, both A and B are greater, as when you mix wine with water, for each ingredient is alike increased in volume. The explanation, in all probability, is that the substance

> (the *ousia*) of the one remains unchanged, but the substance (the *ousia*) of the other does not.
>
> (*GC* 321a30)

In the abstract, we have four choices when we think about eating: (i) the eater gets bigger (= grows); (ii) the eaten gets bigger; (iii) both get bigger; or (iv) nothing gets bigger, everything staying as it ever was, though perhaps eaters and the eaten enter into intimate proximity with one another in the course of a meal.

We think that (i) is the obvious answer, too obvious perhaps even to state. Aristotle agrees, but now wants to press a point with respect to our natural and unreflective choice: the first alternative is to be preferred because the *ousia* of the one persists, namely the organism, while the other ceases to exist altogether. Crucially, these points about persistence are not conventionally determined. It is, Aristotle assumes, not up to us to stipulate that it is the burrito which has got bigger. For if it were, we could easily change the facts, by changing our conventions, and come to suppose that burritos grow when eaten, by appending human bodies to themselves. What makes this way of thinking indefensible is that the persistence conditions of organisms are non-conventional. Further, we are right to say that the man eats the burrito and not the other way around, because the man subordinates the matter of the burrito to his own ends, breaking it down in his metabolism and discarding what is useless to him. All such talk of subordination, however, is already ineliminably teleological in character.

Here, then, is Aristotle's metaphysical defence of teleological causation, which proceeds at the level of the entire organism (**TO**):

1. Organisms are non-conventionally existing diachronic continuants, bounded in space and time, capable of growing to maturity.
2. The only, or best, explanation of these facts is that organisms have non-conventional, non-derived intrinsic ends.
3. Hence, organisms have non-conventional, non-derived intrinsic ends.

(**TO**-1) is supposed to be the purport of our allowing that some entities get bigger by *growing*, which they do, in general, by eating. (**TO**-2) contends that this fact is best or uniquely explained by accepting the existence of final causes for organisms. We have not seen an argument for this conclusion as yet, though Aristotle has hinted at one by suggesting that a living system is more than a mere aggregate and that it makes ready sense to think about material replenishment in the case of organisms by speaking in terms of the appropriation and subordination of matter for the organism's own purposes, or towards its own end.

Looked at this way, the argument for (**TO**-2**)** may be regarded as abductive, in the sense that it accepts as given some phenomenon – namely that living systems are unified entities capable of growing by replenishing their matter – and postulates an explanatory factor, an intrinsic end, as required for an adequate explanation. Another, more deflationary way to approach (**TO**-2) is simply to regard it as an implicit challenge. Unless we are to go the way of the eliminativists, who deny (**TO**-1), suggesting perhaps that it is a matter of convention or indifference whether we think the eater or the eaten gets bigger, then we will need to account for the facts of unity and growth. We have already seen that we should not be looking towards mere aggregation as an appropriate explanation. One can imagine, of course, other sorts of possible explanations, which cannot be ruled out a priori, if at all, until canvassed and considered. Until they are considered, on this second less ambitious understanding of (**TO**-2), Aristotle's appeal to non-derived intrinsic ends for organisms will be his best hypothesis of how to account for phenomena we surely wish to acknowledge, namely that some beings grow by eating, where their doing so is a non-conventional fact, something to be explained and not merely ignored.

Aristotle does consider one sort of alternative hypothesis, one that sounds perfectly natural at first. Perhaps we need not appeal to final causes in this domain, but should think that what explains the fact that the organism persists while the food does not is the simple fact that the one body remains intact, while the other does not. In Aristotle's terms, this sort of proposal is implicitly an

appeal to the material cause: the idea is that we can explain persistence solely in virtue of the persistence of matter. Aristotle doubts this. For this sort of response merely postpones the issue: the body of an organism remains one and the same, sustaining material replenishment through time. It is, as such, bounded in space and time. If we restrict ourselves to appeals to matter alone, we deprive ourselves of the ability to account for these facts. What makes it the case that the matter of a chair upon which a woman sits while reading is not part of her body? There are, after all, chemical interactions between her skin and objects in contact with her skin. If we were thinking of her body as *structured* matter, then we have made an implicit appeal to form; but an appeal to form already implicates us in hylomorphism and all that entails. One thing it entails, Aristotle contends, is an appeal to the sorts of forms operative at the level of the type, namely substantial forms. Such an appeal, in its turn, will require a further reference to function and thus to final causation. Any simple appeal to material causation will prove insufficient; and an appeal to formal causation will be incomplete until forms are construed robustly, at the level of kind membership.[42] Thus, attempts to account for the facts of (**TO**-1) in such terms will fail, pushing us back again in the direction of (**TO**-2).

When he thinks about the facts of life and persistence, Aristotle supposes that we will ultimately find ourselves appealing to non-derived final causes, as required for explanatory adequacy. This is one of the reasons teleological explanation runs very deep for him: it runs as deep as the division between the living and the non-living. As we have seen, appeals to the intrinsic goods of living systems already implicate Aristotle in supposing that living systems are essentially alive, and that, consequently, what it is to exist at all for a living system is for it to have a function. We have already also seen that he has the machinery to distinguish those features of an entity which are essential from those which are not, in the apparatus of substantial and accidental forms,[43] together with the allied thought that forms are those entities whose presence makes something potentially *F* actually *F*. In the case of organisms, this amounts to the view that actual living systems

exist when matter of an appropriate kind is enformed by a substantial form whose presence makes it both living and the kind of living thing it is, which makes some animals both living and an animal of a discernible kind, a jaguar rather than a poodle.

For these sorts of reasons, Aristotle is unhappy with opposing views he regards as equally extreme: teleological eliminativism and teleological intentionalism. To the eliminativists, he has wanted to insist that at least some events permit of – or, more strongly, require – teleological explanations, namely human actions and crafts, which are explained fully only by reference to the ends they seek. To the intentionalists, who have agreed with this much, he has wanted to contend that teleological explanation need not – indeed, should not – be restricted to the domain of intentional agency. We need not apologize or regard ourselves as speaking loosely when we appeal to the functions of spider webs, nests, body parts or indeed whole organisms. Things may be as they seem without the invocation of an intentional designer.

2.9 RELATIONS AMONG THE CAUSES

In ascribing non-derived, non-intentional ends to organisms, Aristotle has committed himself to a close connection between the formal and final causes of living systems. A substantial form of a living being is essential to the organism whose form it is and so is appropriately appealed to when questions about its good arise. This closeness helps explain an otherwise puzzling remark we have already encountered in Aristotle's bid to press teleological explanation beyond the intentional. He concluded his suggestion in that connection by contending: 'Since nature is twofold, as matter and as form, the form is the end, and since all other things are for sake of the end, the form must be the cause in the sense of that for the sake of which' (*Phys.* 199a30–32). In the case of organisms he *identifies* the formal and final cause. The form of a squirrel *is* its final cause.

If that is so, we may wonder whether organisms have not four causes, but three: the efficient, the material, and the formal/final. Indeed, matters are still worse because Aristotle is prepared to take

a further step by identifying the efficient cause with the formal and final. He claims, for example:

> Now, the causes being four, it falls to the natural scientist to know them all, and he provides an account in the manner of a natural scientist by leading the quest of why something obtains back to them all – the matter, the form, the mover, that for the sake of which. The last three often co-incide: for what something is and that for the sake of which it is are one, while the primary source of motion is the same in species as these: for man generates man.
>
> (*Phys*. 198a22–27)

Thus, perhaps, we should be thinking, then, not of a four- but of a *two*-causal explanatory schema. If the formal, final, and efficient causes are one, and the matter another, then really, one might conclude, there are but two causes, one of which enjoys several names.

That would be a mistake. In identifying three of the four causes in the case of living beings, Aristotle does not intend to suggest that what it is to be a final cause in the case of organisms is the same as what is to be a formal cause. Rather, he is thinking of these causes as co-extensive. That is, in some frameworks, final, formal, and efficient causal explanations will designate the same feature of the world. Just as it may be true to say that the President of the United States of America is the most powerful white male in the world, in the sense that (let us stipulate) one and the same figure has always been both the most powerful white male in the world and the President of the United States of America, it does not follow that what it is to be the most powerful white male in the world is the same as (means the same as, if you prefer) what it is to be the President of the United States of America. Perhaps soon the most powerful white male will be the Prime Minister of France, or the President of the United States will be a woman and so trivially not the most powerful male in the world. Though co-referential, these expressions diverge in what they are expressing with respect to their shared referent. So too with formal and final causes: the form of an organism may be both what the organism

is for, its final cause, and *what it is*, its substantial form. This is the sense in which Aristotle has wanted to contend that the formal cause is, in the case of organisms, the final cause.

This is fortunate, because Aristotle also wants to contend something crucial about the four causes which is directly incompatible with their being the same in any sense stronger than extensional equivalence. For he contends that there are priority relations between the four causes, such that some cut deeper in explanation than others. In particular, Aristotle argues that the final cause is prior to the other causes when it comes to determining the essence or nature of things. Thus, he contends that the function of things determines what they are:

> All things are defined by their function: for in those cases where things are able to perform their function, each truly is an F, e.g. an eye, when it can see. But when something cannot perform its function, it is homonymously F, like a dead eye or one made of stone, just as a wooden saw is no more a saw than one in a picture.
>
> (*Met*. 390a10–15; cf. *GA* 734b24–21; *PA* 640b18–23; *Met*. 1029b23–1030a17; *EN* 1098a7–8; *Pol*. 12253a19–25)

In this passage, Aristotle states a foundational principle of his to which he will appeal implicitly and explicitly over and over again in his writings. In its simplest formulation, it is his *functional determination thesis*:

> **FD**: An individual x will belong to a kind F iff x can perform the function of that kind.

(**FD**) makes two claims: (i) something belongs to a kind F if it can do what Fs do; and (ii) if something cannot do what Fs do, it does not belong to the kind F. So, for example, something is a light just in case it can illuminate. That is, something qualifies as a light irrespective of whether it is incandescent or fluorescent or halogen or LED or burning gas. Nothing stitches these disparate kinds together in terms of their matter or form, construed, at any rate, superficially, in terms of shape. Only function seems up to the job

of individuating this kind. Heading in the other direction, if I have a defunct irreparable flashlight, Aristotle will suggest it is no longer in fact a light – except, to use his preferred terminology, *homonymously*, by which he means that we may yet *call* it a flashlight, though it is not a real one, no more than a decoy duck is a real duck.44 For this reason, Aristotle relies upon (**FD**) as a principle of kind individuation.

Also for this reason, he tends to treat the final cause as prior to the other causes, as 'the cause of causes' in the apt expression of a later Aristotelian.[45] The final cause is prior to the other forms of causes insofar as it sets constraints on them. If we accept (**FD**), then we think that what something is fundamentally or essentially is given by its function. A function, however, can express itself only via various forms, and ultimately, in suitable kinds of matter. A hammer has the function of pounding nails; so, it requires a structure suited to that end. Nothing shaped like a nimbus cloud will be a hammer, because nothing with that form can drive nails. Having the right shape, however, is not yet sufficient. Something shaped like a hammer but made out of chocolate will not really be a hammer at all. If we call it a hammer, then we are speaking, as Aristotle says, homonymously – we apply the name 'hammer' to it, but we do not do so intending to treat the item as an actual hammer. Hammers are realizable only in functionally suitable matters, and chocolate is not suited to the task to driving nails. Note, however, that talk of *functional* suitability is already to constrain the material cause by some prior appeal to function, and so to the final cause. It is in this sense that the final cause is prior: it sets constraints on the suitability of form and matter for the expression of some end.

We see, then, that far from challenging one another, Aristotle's two contentions about the relations between causes complement one another. When he is thinking of forms in a metaphysically robust sense, Aristotle will assert directly that the 'essence of a thing, its form' is its 'nature', which is 'the end or that for the sake of which' (*Phys.* 198b4–5). So, 'end' and 'form' pick out the same explanatory factor, though under different guises. Still, the form, thus construed, is already thought of as conforming to the functional constraints laid down by (**FD**), the functional determination thesis.

We do not end up with a contradiction in thinking that one and the same thing, the form which is the end, is both prior to itself (as the final cause) and posterior to itself (as the formal cause), even while being one and the same. On the contrary, though in a complete explanation the formal and final cause will designate the same feature of the world, the feature of its being a final cause is prior to its being a formal cause. If that sounds complex, we may come back to a simple illustration of Aristotle's: what explains an eye's having the structure it has is its function, namely the detection of colour and light; but an eye's structure just is its having light and colour detectors. Or, to revert to an illustration involving an artefact, what explains a can-opener's having the form it has is its being designed to perform the task of opening cans, and in this sense its final cause is prior to its formal cause. Its function delimits the kinds of form and matter it may have. Still, when we explain its function, we appeal to its form, as realized in some functionally suitable matter, and in this sense, we appeal to one and the same structure when we explain what it is (its form, it is a can-opener) and what it is for (its function, it is for opening cans).

That said, it should be noted that we have so far restricted ourselves to cases favourable to (**FD**), because we have appealed to kinds which are intuitively functional kinds. In fact, Aristotle thinks the clearest cases where form and final cause co-incidence arise not among artefacts, but in the realm of nature, among living beings (*Phys.* 198a25–27). If we feel reluctant to join him in treating (**FD**) as so completely general, this is most likely due to our reluctance to find in nature final causes which are non-intention dependent. If Aristotle has made a reasonable case for his contention that we should be neither eliminativists nor intentionalists about final causes in nature,[46] then at least this aspect of our reluctance is misguided.

2.10 CONCLUSIONS

Like most people, Aristotle wants the answers to the questions he asks to be more than merely satisfying: he wants them to be genuinely explanatory. He wants his explanations, that is, to be

objectively correct. He thus expects his explanations to adhere to the canons of rational adequacy. His desire leads him – as it has led other philosophers and scientists since his time – to reflect on the properties good explanations must as such exhibit. His answer, for a broad range of cases, is his *four-causal explanatory schema*. The four-causal schema, he urges, is adequate precisely because it is *causal*: full and correct explanations are those which cite objectively obtaining causes. So far, many will agree with Aristotle, supposing that when people have been satisfied by (alleged) explanations which in fact fail to reflect the causal structure of the world, they have only failed themselves by resting content with illusions rather than realities. Still, even among those who embrace Aristotle's commitment to causally anchored objective explanations, there may be yet many who resist his further insistence that adequate explanations need to appeal to all four causes. Indeed, it is a hallmark of modern philosophy to reject the notion of final causation, and to a lesser but still appreciable extent, the notion of formal causation.

Aristotle's response to his detractors comes in two waves. First, he argues directly for the real existence of matter, form, and function. There must be matter and form, he argues, if there is to be change; and there is, no doubt, change. Further, we ascribe functions together with end-directed behaviour in the realm of nature no less than in art and craft. We suppose that agents do things *for the sake* of their ends; and we think organisms are outfitted with parts suited to discharge functions relative to the survival and flourishing of the organisms whose parts they are. Given our easy and reasonable propensities in these directions, Aristotle finds it appropriate to urge a middle way between what he sees as two mistaken extremes: the absolute denial of all final causation, eliminativism, and the restriction of function to the realm of conscious design, intentionalism. His arguments here are initially less compelling than his arguments for form and matter. In any event, the primary argument of *Physics* ii 8, (**ATC**), his brief argument for teleological causation, seems plainly unacceptable as it stands. Still, he has additional arguments not so easily set aside, because they rely on deeper metaphysical principles pertaining to the normativity of life and the impossibility of explaining such fundamental

facts as the diachronic unity of living beings in the absence of unifying final causes.

Because these arguments tend to be both foundational and abstract, they are unlikely to win converts among the sceptical without protracted engagement. Fortunately, although such argument is necessarily abstract and highly general, a consideration of the merits of Aristotle's four causal explanatory schema may also proceed via a second, less abstract but more indirect approach. The second wave of defence unfolds in Aristotle's actual deployment of his the four-causal explanatory schema. That is, it seems in some measure fair to judge Aristotle's four-causal schema by its success or failure in its applications; if we find him deploying the four-causal schema to good effect in metaphysics, psychology, ethics, politics, and art, then we have some reason to credit him with a success in adumbrating and articulating a defensible explanatory framework. By the same token, if the explanations this schema provides prove persistently spurious, then we have reason to question the framework in terms of which his explanations have been cast. In this sense, our ultimate judgment regarding the four-casual schema awaits an assessment of its deployment across the range of inquiries Aristotle engages.

Be that as it may, it will prove imperative as propaideutic to any adequate understanding of Aristotle's philosophy that his four-causal explanatory schema be grasped in at least the level of detail in which it has been presented here; for it forms the skeletal structure of the explanations he advances in nearly every area of his inquiry. He wonders, as we all wonder, about questions of abiding interest; and he structures his theorizing in answer to his wondering within the framework of his four-causal explanatory schema. In its terms alone, he contends, can we move forwards, from wonder to world-view.

FURTHER READING (* = ESPECIALLY SUITED TO BEGINNERS, IN TERMS OF CLARITY OR ACCESSIBILITY)

Primary Sources

Aristotle, *Physics* i–ii; *De Generatione et Corruptione* i 1, 3–5, ii 2–5; *De Partibus Animalium* i 1

Secondary Sources

Charlton, W., *Aristotle's Physics I, ii*, trans. with Introduction and Notes (Clarendon Press: 1970)

*Guthrie, W. K. C., *Aristotle: An Encounter* (Cambridge University Press: 1981), pp. 106–29, 223–42

Hankinson, R. J., *Cause and Explanation in Ancient Greek Thought* (Oxford University Press: 1998), pp. 125–200

Johnson, Monte Ransome, *Aristotle on Teleology* (Oxford University Press: 2004)

Three

Thinking:

Scientifically, Logically, Philosophically

3.1 DEFINITION

We ask: *what is a star?* Although common and easily asked, this question can prove complicated to answer. It is not that responses are difficult to fathom. On the contrary, answers abound. Indeed, this is where the difficulty emerges: the question admits of a variety of answers, each perfectly correct as far as it goes, but not all going to the same place, nor even in the same direction. That is, on its surface, the question seems to call for a *definition*. So, one might expect one form or another of definition in response. Perplexity follows the realization that this expectation might be met in a number of non-equivalent ways. Thus, one definition someone might offer is:

(Def_1) A star is a celestial body shining in the night sky.

Another sort of definition is more ambitious:

(Def_2) A star is a gravitationally bound ball of hydrogen and helium gas, made self-luminous by internal nuclear fusion.

Each of these definitions asserts something true; and each provides one sort of definitional response to our initial question. Still, even if we lack an articulated theory of definition, most of us will agree that (Def_2) cuts deeper than (Def_1). (Def_1) is shallow, and so adequate only to a shallow version of our original question. (Def_2),

by contrast, strives for depth. As a first appraisal, it seems fair to say that (Def_2) moves some way towards its goal, first because it helps set the extension of the class of stars by distinguishing them from other celestial bodies, which shine merely by reflecting light, and second because it tells us something about the *nature* of stars. It tells what it is that makes a celestial body a star. Consequently, if we seek to know what stars are, we are more likely to be satisfied by (Def_2) than we are by (Def_1).

If this is so, then in contexts of serious inquiry we share with Aristotle a preference for deep rather than shallow definitions. That is, when we seek definitions in philosophical or scientific contexts, we are not satisfied with the merely lexical. If we are scientists, and we are wondering what gravity is, we do not simply consult the entry under 'gravity' in a recent edition of the *Oxford English Dictionary* and then suppose that we have finished with our work when we put the volume back on its shelf. On the contrary, it is the vigilant group of lexicographers on the staff of *OED* who consult scientific and popular publications in an effort to keep abreast of scientific developments so that they may record resultant shifts in lexical meaning as they trickle into common discourse. In science and philosophy, we want not lexical but *essence-specifying* definitions. This is the sort of definition Aristotle has in mind when he says, 'A definition is an account (*logos*) which signifies the essence' (*Top.* 101b38; cf. 141b26; *APo.* 92b35–37, 96b26–32).[1] A deep definition must be essence-specifying precisely because when we seek to understand what something is, we want to know what it is *in its nature*, and not merely how it may seem on its surface.

3.2 ESSENCE AND ACCIDENT

Aristotelian explanations thus rely crucially upon a distinction which has caused a good deal of dissent in the philosophical tradition which follows him, namely the distinction between essence and accident.[2] At its root, however, the distinction has a perfectly intuitive air about it, at least in the sense that most of us presuppose some version of it in our pre-reflective ways of thinking

about the world, finding it implicated, for example, in our own self-conceptions. At least until challenged, and usually thereafter, most of us accept twin presuppositions whose natural explanation seems to require a distinction between essence and accident: (i) many things come in and out of existence; and (ii) some things change in various ways during the course of their existence while remaining numerically one and the same. Thus, we are ourselves born, grow, decline, and die. We did not exist before we were born; and in the course of our lives we alter in countless ways. Yet when we change in these ways, we remain numerically one and the same. If we go to the beach and return with a suntan, then we have changed but not therefore ceased to exist. On the other hand, if we suffer the misfortune of having our bodies torn apart by a fierce explosion, then we die and do not merely change our location by becoming scattered particulars. Some changes are consistent with our continued existences and some are not. Those which are we may call *accidental* changes; those which are not are *essential*. To the extent that we habitually mark these sorts of distinctions, we conceive ourselves as having essences and accidents.

We have already seen Aristotle tracking this distinction by dividing forms cited in formal causal explanations into two: the substantial and the accidental.[3] Put briefly and informally, some forms make an entity *what it is and must be so long as it is to exist*, while other forms may comfortably come and go in the course of a thing's existence. Some forms are accidental forms and some forms are essential. Again, while it is possible to lose an accidental form and continue to exist, the loss of an essential form spells our demise. To begin with an example favourable to Aristotle, your current hair colour is accidental, as is, let us say, the fact that you at present have an even number of hairs upon your head. If you pluck out one hair, or dye your hair grey, you have changed but not died. Contrast that with the property of *being human*. Arguably, the moment you lose that property is the instant of your death: when you are no longer human, you are no more. Put in Aristotle's terms, a human being is a *substance* and *exists unqualifiedly*, whereas a grey-haired human being does not exist unqualifiedly, but is rather a substance sporting an accidental feature.

Without mounting a full-blown defence of Aristotelian essentialism – for its proof will reside ultimately in its explanatory efficacy across a series of domains – we can agree provisionally that Aristotle's distinction between essential and accidental forms tracks a genuine division between the deep and shallow features of things. An essential property is deep partly because of its modal status: essential properties are *necessary* rather than merely contingent. Still, importantly for Aristotle, the depth of essential properties is not, exhausted by their modal features. That is, so far we have been noting that essential properties are the sort which, if lost, result in the demise of their bearers. This is why we say that essential properties are necessary properties. If we were to say only so much about essential properties, then we would be *modal essentialists*, because we would be treating essential properties as completely analysed by their modal features, in this case by their being necessary.

It will be important for understanding Aristotle that we appreciate that his is a more robust approach to essentialism than some of his contemporary counterparts, who are content with a version of *modal essentialism*, according to which:

> Φ is an essential property of $x =_{df}$ if x loses Φ, then x ceases to exist.

Aristotle does not think this approach wrong so much as incomplete. It is true, he supposes, that if Φ is an essential property of x then x will cease to exist if x ceases to be Φ. Still, the modal facts are not sufficient by themselves to capture Aristotelian essentialism. Two observations help us to appreciate why.

First, we can attend to some linguistic matters which help orient us to Aristotle's more robust approach. When we encounter the word 'essence' in English translations of Aristotle, we may in fact be tracking any of a number of different Greek expressions, most of which in their contexts are appropriately translated as 'essence' but which nonetheless may have at most only partial overlap in Greek (*APo* 83a7; *Top.* 141b35; *Phys.* 190a17, 201a18–21; *GC* 319b4; *DA* 424a25, 429b10; *Met.* 1003b24, 1006a32,

1006b13; *EN* 1102a30, 1130a12–13). Among the locutions one finds rendered as *essence* are: (i) *to ti esti* (the what it is); (ii) *to einai* (the being); (iii) *ousia* (being); (iv) *hoper* (precisely what something is); and, most importantly, (v) *to ti ên einai* (the what it was to be). When rendered verbatim, (v) is barely intelligible in English, which is why translators resort to paraphrases or rough equivalents when representing it. Once we see what it means, however, we can see why they are justified in rendering it as 'essence'. Aristotle uses this cumbersome phrase as a technical term,[4] as shorthand for a longer expression. The phrase 'the what it was to be' compresses, for instance, '*that which it was for a human being to be a human being*' where 'for a human being' might be replaced by anything with an essence, e.g. 'that which it was for a triangle to be a triangle', or more generally, then, 'that which it was for Φ to be a Φ'.[5] This brief excursion into Aristotle's rather idiosyncratic Greek suggests that he is interested in something more than mere necessity: he wants to know the *nature* of things, what it is, for example, that makes a human being be a human being in the first instance. He accordingly seeks to uncover what is explanatorily central to something's qualifying as a member of that species. If we say that Socrates is human but that a dustbin in the garden is not, then we say something true, but as yet hardly informative. To move beyond the trivial, we need to begin to specify what it is that makes Socrates a human being. This will implicate us in specifying Socrates' essence in contentful terms – terms requiring investigation and analysis for their eventual specification (*APo* 75a42-b2; *Met.* 103b1–2, 1041a25–32).

Second, this point about what makes Socrates a human being finds a further important expression in Aristotle's conception of essence and explanation. Consider the following facts about Socrates: he has grey hair; he is rational; he is stubborn; he is sitting in the garden with his hand on his forehead; he is capable of learning languages other than his native Greek; he is married to Xanthippe; he loves philosophical conversation; and his favourite rose is the Gloire de Dijon. Some of these features are, because accidental, easily lost. Others, arguably, are essential. Let us agree provisionally that it is an accidental feature of Socrates that he has

his hand upon his forehead and an essential feature that he is a rational. What should we say about his ability to learn languages? Could he lose it without ceasing to exist? Evidently, he could lose that property only if he ceased to be a rational being. Hence, it follows that he could lose his *grammaticality*, as we may say, only if he failed to exist.

That suggests, by the modal definition, that grammaticality should be essential to him. Something is wrong about that, Aristotle implies, at least to this extent: being rational cuts deeper than being grammatical. After all, if asked to determine whether rationality explains grammaticality or grammaticality rationality, most of us would say that rationality explains the ability to learn language and not the other way around. We may say, then, that rationality is *explanatorily* prior to grammaticality. Indeed, being rational is explanatorily prior to a whole range of traits taken individually, whereas none of them explains it: grammaticality, literacy, numeracy, our ability to hypothesize and engage in counterfactual reasoning, our disposition to study history, our ability to judge one form of words as a sonnet and one form of sounds as a sonata, even, to use an example favoured by the later Aristotelian tradition, our ability to find some things funny and our consequent ability to laugh, our risibility. If we think that all of these traits are explained by rationality but that they do not explain it, then we also think that rationality is prior to them, that it is more central and more explanatorily potent. Thus, when we want to say *what it was for a human being to be a human being*, or to specify the *being* of human being, or, in our terminology, to specify its essence, we will do well to appeal to rationality rather than the cluster of necessary features it explains.

Aristotle has a technical term for non-essential but necessary features. They are *propria* (*idia*, in Greek; *Cat.* 3a21, 4a10; *Top.* 102a18–30, 134a5–135b6).[6] Since the *propria* are no less necessary than essential features, it follows that the modal account of essence is incorrect, or incomplete. We say in addition to the unlosability of a feature, for a property to qualify as an Aristotelian essence, it must also be explanatorily basic, where the notion of explanation in view is objective rather than subjective.[7] Thus, the essential

properties Aristotle recognizes are a sub-set of those recognized by the modal version of essence preferred by many contemporary philosophers. An *Aristotelian essentialist* holds:

> Φ is an essential property of $x =_{df}$ (i) if x loses Φ, then x ceases to exist; and (ii) Φ is in an objective sense an explanatorily basic feature of x.

The notion of explanatory basicness in view is roughly the thought already informally introduced: a property Φ is explanatorily basic to x when it asymmetrically explains other features of x, including those whose loss entails the non-existence of x. Those features which are in turn necessary but non-essential include the *propria*.

The class of non-essential but necessary properties include the *propria*, though the *propria* do not exhaust this class. Some features are trivially such that their loss would entail the non-existence of that of which they can be truly predicated. Thus, the whole while Socrates exists, he is rational (essential), risible (*proprium*), and such that he *either is or is not identical with the number nine,* that he *either is or is not awake*, or that he is *a member of the singleton set of Socrates*. Notably, the first of these traits is necessary to anything at all, including the number nine, and so tells us nothing about Socrates in particular; the second is trivially true of anything capable of sleep, and the last tells us more about being a singleton set than it does about Socrates. Although it is a non-trivial matter to determine just how these sorts of features are to be regarded, we can at least start with the simple observation that none of them tells us *what Socrates is*. This, however, is what is wanted in the specification of an Aristotelian essence (*Top*. 102a18–30).

Aristotle provides a semi-technical way of thinking scientifically about these features. Using the notion of *convertability*, he suggests that one can winnow the necessary but non-essential, non-*propria* from the genuine *propria* as follows:

> A *proprium* is a property that does not reveal the essence (*to ti ên einai*), though it belongs only to that subject and is convertibly predicated of it. It is a *proprium* of humans, for example, to be

> capable of grammatical knowledge; for if someone is a human, he is capable of knowledge, and if someone is capable of grammatical knowledge, he is a human. For no one counts something as a *proprium* if it can belong to something else. For example, no one counts being asleep as a *proprium* of humans, not even if at some time it should happen to belong only to humans . . . It is clear that nothing that admits of belonging to something else is convertibly predicated of its subject. It is not necessary, for example, that what is asleep is a human.
>
> (*Top.* 102a18–30)

Aristotle's idea is that once we have identified that a property follows of necessity from an essential property, we can also then determine whether it qualifies as a *proprium* by examining whether it is restricted to the subject of which it is predicated. Thus, to use Aristotle's example, if we agree that *being capable of sleep* follows from the essence of human beings, but that it is a feature shared in common with non-human animals, then we can nevertheless determine instantly that it is not a *proprium*.

It is debatable whether convertibility provides a sufficient condition for a non-essential necessary property's qualifying as a *proprium*. Still, it takes us at least part of the way. In the present context, however, the point to stress is that the existence of *propria* shows that Aristotle's essentialism is richer than many modern, merely modal accounts of essence. What makes one necessary property essential and another not is precisely that the first, but not the second, is explanatorily basic. Since, then, deep definitions express essences, and essences are explanatorily basic, we expect from Aristotle some indication of what makes a property explanatorily basic. His introduction of *propria* provides at least a first indication of how he understands explanatory basicness. Although this theory may at first appear forebodingly technical, it serves to start with the simple thought that *x being rational* explains *x being capable of grammar* and not the other way around. The asymmetry captured in this sort of example suggests why in Aristotle's non-modal essentialism *rationality* emerges as a good candidate for the human essence.

3.3 THE STRUCTURE OF SCIENTIFIC KNOWLEDGE

It serves to start our account of explanatory basicness with the *proprium*; but if we also finish with only this much in view we miss the most central commitments of Aristotle's conception of science (*epistêmê*) and scientific explanation. We also therefore miss some central commitments of his entire philosophical method. For in the broad sense in which Aristotle conceives of science, not only the empirical sciences but also metaphysics, mathematics, ethical theory, politics and rhetoric all qualify as sciences.[8] Indeed, although it is difficult to capture in English, Aristotle uses the single word *epistêmê* to refer to what we might call a *body of scientific knowledge* and to describe the *state of knowledge* that someone knowing this body of knowledge is said to be in.[9] The same is true of the standard Latin equivalent for *epistêmê*, namely *scientia*, from which we derive our word *science*. (Some remnant of the Latin use of *scientia* survives in English in our willingness to speak of someone as having or lacking *scientific understanding* of some state of affairs, or in such expressions as *skilled diamond cutting requires art no less than science*.) In any event, someone with knowledge in any of these disciplines listed is, according to Aristotle, in a state of *epistêmê*. All these areas in principle admit of the same basic form of expression: at least conceived ideally, each may be put forward as an organized, articulated body of knowledge.

Every science, consequently, strives to realize three key ideals. First, a branch of knowledge captures and displays the essences of the members of its domain. So, for example, biology displays the essences of living beings, while mathematics trades in numbers and other mathematical abstractions, and so on for any branch of knowledge. Second, a branch of knowledge makes plain precisely how essences in that domain are explanatorily prior to the other properties which members of that domain exemplify, including but not limited to their *propria*; and it does so in such a way as to respect some deep epistemic constraints (to be investigated presently). Finally, a branch of knowledge adheres to *formal* or logical constraints: *epistêmê* employs *deductions*, which are a kind of

syllogism. So, *epistêmê* must respect logical requirements, which it may do by adopting a canonical form of expression.

All that may be a bit abstract. Let us start with an important epistemological argument of Aristotle's about the character of the fundamental principles of science. Science is explanatory. A proper scientific explanation not only puts facts on display, but gives an account of *why* the fact should be so (*APo*. 78a22–28). That is, a scientific explanation does not merely report, for example, that dolphins have lungs, but seeks in addition to explain the relation of dolphins to other sorts of animals with lungs, by pointing out deep regularities manifested by all creatures with lungs, and thus eventually citing what is essential to the kind to which dolphins belong. In fact, we think we have an adequate explanation in the objective sense, suggests Aristotle, when we have demonstrated that a certain trait belongs *of necessity*, and when we have shown, ultimately, that the trait follows from principles which are themselves necessary (*APo*. 71b9–16). Aristotle contends, then, that we have knowledge only when we have grasped what is explanatorily basic and necessary in a given domain of inquiry.

Aristotle's approach has occasioned concern as some suppose that his contention regarding the role of necessity in *epistêmê* implicates him in a simple modal fallacy. On this way of understanding him, Aristotle moves from supposing, correctly:

> Necessarily, if S has scientific knowledge *that p*, then *p* is true.

to the unwarranted conclusion that:

> If S has scientific knowledge *that p*, then *p* is necessarily true.

If he argues this way, then Aristotle is surely in error. From the general claim that some conditional is necessarily true, we cannot affirm the necessary truth of its consequent from the bare truth of its antecedent. Thus, for example, from the true conditional *necessarily if S is married, then S has a spouse*, it hardly follows if *S is married*, that *S necessarily has a spouse*. Married people may divorce; so, married people are only contingently and not necessarily married.

Does Aristotle argue this way? The matter is disputed, though the beginning of his *Posterior Analytics* i 2 is sometimes understood to be resting upon such a mistake:

> We think we understand a thing without qualification, and not in the sophistic, accidental way, whenever we think we know the cause in virtue of which something is – that it is the cause of that very thing – *and also* know that this cannot be otherwise. Clearly, knowledge is something of this sort. After all, both those with knowledge and those without it suppose that this is so – although only those with knowledge are actually in this condition. Hence, whatever is known without qualification cannot be otherwise.
>
> (*APo* 71b9–16)

Looked at one way, Aristotle makes a modal mistake in this passage by inferring from its being necessary that knowledge grasp a cause to its being the case that the cause grasped is itself necessary. Another interpretation of this passage is more generous to Aristotle: science tracks the deep invariances of nature and accordingly focuses on essence; and since essences are necessary, it follows that science tracks the necessary. On this approach, Aristotle does not argue from something necessary *de dicto* to something necessary *de re*,[10] but rather *presupposes* that there are essences, which are, *inter alia*,[11] *de re* necessities, and so expects knowledge of the world to reflect them. That is, rather than inferring that knowledge must be of what is necessary from the demands of knowledge, he does not infer anything at all. Rather, he reports that we have genuine knowledge when we have grasped those causes which cannot be otherwise, when, that is, we have grasped the necessities obtaining in the world. If this is so, then his commitment to the necessity of the basic starting points of scientific explanation is neither more nor less defensible than his general commitment to essentialism.[12]

Whatever his ultimate justification, Aristotle does expect the starting points of science to be necessary. Moreover, he also expects them to be *better known* and *more intelligible* than the truths derived from them (*APo* 71b33–72a5; *Top.* 141b3–14; *Phys.*

184a10–23; *Met.* 1029b3–13). The demand that premises be *better known* may seem an odd restriction on the starting points of scientific reasoning. What matters in science, we may think, is that knowledge accrues over time, incrementally building upon and expanding what is already established, not that it obey some strictures pertaining to the epistemic states of the scientists at work. In fact, though, Aristotle's contention here is both more exotic and less peculiar than so much suggests. For he distinguishes what is better known *to us* from what is better known *by nature* or *without qualification* (*APo* 71b33–72a5; *Phys.* 184a16–23; *EN* 1095b2–4). What he means in this contrast is first, humbly, that we begin where we are in an investigation, that we consider how things appear – the appearances (*phainomena*), as Aristotle calls them[13] – even though we need not expect that we will end up where we began. (It appears that the sun sets in the evening and rotates around the earth; it turns out that this appearance is false, but it nonetheless remains an appearance (cf. *DA* 428b2–5).) Because the appearances may give way once we subject them to scrutiny, what is known to us will often prove unsuitable, because insecure or even false;[14] but what is known by nature *cannot* be false. What is better known by nature is indeed not only more secure than what is better known to us, but also trades in what is real, in what is most intelligible, what is secured only at the end of a successful investigation into a subject, whether it be natural philosophy or metaphysics.

Further, it will turn out that what is securely invariable and intelligible obtains universally, so that the first principles of a science will range over universals rather than particulars (*Met.* 981a5–30, 1039b27–1040a7; *Rhet.* 1356b30–35). This in part helps explicate the conception of 'science' (*epistêmê*) with which Aristotle is working. He is not thinking of 'knowledge' in an unrestricted sense, according to which we might know any random fact or individual, but rather in terms of an organized body of knowledge. In this sense, although we say that 'Xanthippe knows Socrates' we do not suppose that there is a science of Socrates. Science (*epistêmê*), in Aristotle's sense, concerns not the particular but the general.

Taking these points together, then, Aristotle expects an expression of scientific knowledge to obey some general canons of presentation. An Aristotelian science proceeds via demonstration (*apodeixis*), which is a kind of deductively valid reasoning in which the premises are necessary, better known than their conclusions and universal in scope (*APo* 71b16–25, 77b5–73a6; *Meta.* 981a5–30, 1006a6–18, 1039b27–1040a7).[15]

These demands on scientific explanation jointly prompt Aristotle to reflect on the first principles of each science. If the first principles of a science are necessary, universal, and better known by nature than what follows from them, then we might wonder about the status of such principles. Are they derived from still earlier principles? *Can* they be so derived? Need they be so derived, if they are already necessary? Aristotle has a general epistemic attitude towards first principles, one which raises a difficult and long-lived question about how they can come to be known. Many of Aristotle's questions are live questions even today, insofar as we continue in to argue in epistemology about the relative merits of coherence and foundational theories of knowledge. Aristotle himself sides with foundationalism and argues by means of a far-reaching argument that first principles of science must be *primitive*. I divide Aristotle's text into sections for ease of reference:

(A) Some people think that since knowledge obtained via demonstration requires the knowledge of primary things, there is no knowledge. Others think that there is knowledge and that all knowledge is demonstrable. Neither of these views is either true or necessary.

(B) The first group, those supposing that there is no knowledge at all, contend that we are confronted with an infinite regress. They contend that we cannot know posterior things because of prior things if none of the prior things is primary. Here what they contend is correct: it is indeed impossible to traverse an infinite series. Yet, they maintain, if the regress comes to a halt, and there are first principles, they will be unknowable, since surely there will be no demonstration of first principles – given, as they maintain, that only what is demonstrated can be known. But if it is not possible to know the primary things, then neither can we

know without qualification or in any proper way the things derived from them. Rather, we can know them instead only on the basis of a hypothesis, to wit, *if* the primary things obtain, then so too do the things derived from them.

(C) The other group agrees that knowledge results only from demonstration, but believes that nothing stands in the way of demonstration, since they admit circular and reciprocal demonstration as possible.

(D) We contend that not all knowledge is demonstrative: knowledge of the immediate premises is indemonstrable. Indeed, the necessity here is apparent; for if it is necessary to know the prior things, that is, those things from which the demonstration is derived, and if eventually the regress comes to a standstill, it is necessary that these immediate premises be indemonstrable.

(*APo* 72b5–23)

Since they may not be derived in a circular manner, and since the process of derivation cannot go on without end, first principles must be known directly.

Aristotle represents his opponents as coming in two waves. First, there are those (discussed in B) who deny that knowledge is possible on the grounds that to know anything we must first derive it from something better known, only to insist that nothing is known unless it is demonstrated. Since this process of demonstration cannot go on forever, we can have at best conditional knowledge. Second are those (discussed in C) who agree that all knowledge is based on demonstration, but insist that we nonetheless do have knowledge. Agreeing with the (B) group that demonstration cannot carry on ever backwards, the (C) group infers we must admit circular demonstration as an acceptable form of justification. In sum, the (B) group argues: since all knowledge requires demonstration, and demonstration cannot extend infinitely backwards, we have no knowledge. In contrast, the (C) group argues: since all knowledge requires demonstration, and demonstration cannot extend infinitely backwards, since we do have knowledge, demonstration must loop back on itself, so that, ultimately, we admit circular demonstrations.

Aristotle finds (in D) some points of agreement with both sets of opponents. First, demonstrative knowledge does rely on what is better known, and cannot carry on into infinity, as both the (B) and (C) groups insist. All the same, the (C) group, while right to insist that we do have knowledge, is wrong to admit circular demonstration, whereas the (B) group wrongly infers that knowledge is impossible.

Aristotle's alternative relies on an argument for the *primitive character of first principles* (**PCP**):

1 If there is demonstrative knowledge, then it relies upon a demonstration whose premises are better known (by nature) than its conclusion.
2 There is demonstrative knowledge.
3 Hence, there are demonstrations whose premises are better known (by nature) than their conclusions.
4 These prior premises are themselves either (a) demonstrated or (b) known but not demonstrated.
5 If always (4a), then (a^1) the process of demonstration will carry on into infinity, or (a^2) demonstrations will be circular.
6 It is not the case that ($4a^1$), since it is not possible that knowledge-securing demonstrations carry on into infinity.
7 Nor is it the case that ($4a^2$), since demonstrations cannot be circular.
8 Hence, (4b): the first principles of demonstrations are known but not demonstrated.

(**PCP**-8) is a striking result.[16] There are, according to Aristotle, primary premises of demonstrations which are known, but not themselves demonstrated. Let us call such premises *first principles*.

Before determining what first principles might be, it is worth pausing to investigate whether Aristotle has good reason for asserting the central premises of (**PCP**). These are (**PCP**-2), (**PCP**-6), and (**PCP**-7). These premises surely carry the load of the argument, though one might also want to query whether (**PCP**-5) exhausts the alternatives, as it represents itself as doing.

Aristotle does not argue in the present context for (**PCP**-2), the claim that there is demonstrative knowledge. Instead, he mainly assumes it, choosing instead to focus on what he takes to be the false motivating premise assumed by those who deny the existence of knowledge, those in group (B). They assume that we are in fact confronted with an infinite regress of justification and infer on that basis that there is no knowledge. Nor does he argue for (**PCP**-6), the claim that demonstrations cannot carry on into infinity. Although often enough in the *Physics* and elsewhere, claims of this character can prove controversial, in the present context it seems required by the simple thought that we are finite in time,[17] and cannot carry on forever in offering ever more demonstrations.

Aristotle does, by contrast, feel the need to offer a defence of (**PCP**-7), the claim that demonstrations cannot be circular (*APo* 72b32–73a6). His argument here is direct, evidently putting him at variance with some later philosophers who have found broadly coherentist accounts of epistemic justification congenial.[18] Aristotle is convinced that there can be no circular demonstrations on the basis of the following argument (**NCD**):

1 Demonstration relies upon premises which are prior and better known.
2 Thus, the conclusion of a demonstration ALPHA, ALPHA-C, will depend upon some prior and better known premise, ALPHA-P.
3 Suppose that ALPHA-P is itself the conclusion of another demonstration, BETA (i.e. that ALPHA-P = BETA-C).
4 The conclusion of a demonstration BETA, BETA-C, will depend upon some prior and better known premise, BETA-P.
5 If (3) and (4), then BETA-P, from which ALPHA-P (= BETA-C) is ultimately derived, will be prior and better known than ALPHA-P (= BETA-C).
6 Suppose now that that BETA-P is itself the conclusion of a demonstration, and that that demonstration features the conclusion of ALPHA, ALPHA-C, as a premise (that is, that we are implicated in circular or reciprocal demonstration).
7 If (6), then ALPHA-P (= BETA-C), from which the BETA-P is derived, will be prior and better known than BETA-P.

8 Hence, ALPHA-P will be prior and better known that BETA-P (by 7) and BETA-P will be prior and better known than ALPHA-P (by 5).
9 (8) is impossible.
10 Hence, circular demonstration is impossible.

In view of this sort of consideration, Aristotle dismisses circular demonstration, remarking that its proponents are 'Simply saying that something is the case if it is the case.' Given such licence, he observes, 'It is easy to prove anything' (*APo* 72b32–35).

It is fairly clear, then, that Aristotle's brief against circular demonstration derives from his earlier stricture that in a demonstration, the premises must be prior and better known (by nature) than their conclusion. For in circular definition, if this stricture is respected, it will follow that one proposition *p* will be both prior to another *q*, when *p* is a premise in a demonstration on behalf of *q*, and posterior to it, when *p* conclusion of a demonstration in which *q* figures as a premise. To take a case initially favourable to Aristotle's way of thinking, we cannot infer the proposition *that God exists* from the premises *the Bible says God exists* and *whatever the Bible says is true* while *also* concluding that *whatever the Bible says is true* from the premises *the Bible is the word of God* and *whatever God says is true*. As far as circularity is concerned, either of these arguments might be fine taken individually; but taken corporately they do not withstand scrutiny. The problem, as Aristotle sees it, is that according to the author of this pair of arguments, the proposition *whatever the Bible says is true* both is and is not better known than the proposition *that God exists*. It is easy to appreciate why Aristotle remarks that for someone prepared to argue in this way, 'it is easy to prove anything'. Looked at from this perspective, Aristotle's stricture about the priority of a premise set relative to its conclusion is introduced precisely to preclude facile, if mutually supportive, propositions from claiming the name of *epistêmê*.

This may be just, but if demonstrations can be neither infinite nor circular, then Aristotle is left with the conclusion of his initial argument (**PCP**), that the first principles of demonstrations are primitive: primitive propositions are known but not demonstrated.

How? How are they known, if not demonstrated? The question has some bite in view of the fact that Aristotle is expecting the first principles of the sciences to be substantive, synthetic claims about the world. That is, if we were to understand him as regarding the first principles of the various sciences as simple logical truths, for example *that A is A* or *that p or not-p*, then we might be willing to grant that we simply grasp straightaway that such principles are known as a priori. Plainly, however, he does not; for otherwise they would not form the basis for the substantive conclusions he expects the sciences to support. On his broad conception of science, Aristotle is endeavouring to provide systematic expositions of the order of the world as it is given *by the world itself* and not as it might be imposed by us.

How, then, can we grasp the first principles of demonstration? How, that is, can we know secure, invariant, necessary premises, which are better known by nature than the conclusions we derive from them? Aristotle postpones discussion of this difficult matter until the last chapter of the *Analytics*, his exposition of scientific reasoning and explanation, *Posterior Analytics* ii 19. Scholars dispute the character of his final thoughts on the matter, though it seems clear that in this chapter he evinces a great optimism about the prospects of human knowledge. Some suppose that his optimism is unwarranted or even wilfully naïve; others suppose that he is simply describing how we in fact manage to understand the world in scientific terms. Sometimes impatient with sceptical stratagems, Aristotle tends not to indulge them with extended discussion. Rather, he evidently regards as more profitable than the activity of endeavouring to prove to the satisfaction of the most trenchant sceptic that some one or another of our beliefs is indubitable, the more constructive activity of explaining how it is that we are entitled to regard some of our beliefs as scientifically legitimate and philosophically defensible, while discrediting others as unsustainable.

As he turns to the difficult matter of the epistemic status of first principles in *Posterior Analytics* ii 19, Aristotle quite reasonably denies that the starting points of demonstrative syllogisms are known innately (*APo* 99b15–34). Instead, he suggests, repeated perception

gives way to entrenched memory, which in turn results in a condition he calls 'experience' (*empeiria*), where the word, as it is used in this context, seems to have a quasi-technical force (cf. *Meta.* 981a5–9). In order for something to qualify as what is here called *experience*, a single universal must settle in our soul on the basis of repeated episodes of sense perception. Aristotle, unfortunately, does little to explain the mechanics of the actual process involved. Instead, he compares the transition from experience to the possession of universal to a turn in a battle: one soldier in a side being routed takes a stand, and then is joined by others, until such time as they form a new line from which to mount an advance. The soldiers thus become a new starting point (*archê*) for an advance into battle. In a like manner, the universal emerging from experience in the soul is a starting point for a demonstration (*APo* 100a10–b6). Aristotle asserts, rather boldly, that we on this basis move into a state of understanding (*nous*), a kind of intellectual grasping of the necessary features of reality from which we may proceed to offer demonstrative arguments.

Needless to say, many have found this account lacking, as incomplete at best and perhaps as plainly – and woefully – inadequate. Still, once he has ruled out circular and infinite demonstration, Aristotle can only sketch the alternatives as he sees them. Either we have: no knowledge, innate knowledge, or the incremental grasping of nature's basic principles founded upon perception, memory, and experience. If we are scientific realists who believe that the world presents us with discoverable mind-independent necessary laws – of the sort many working scientists take themselves today to be uncovering and confirming – then it is hard to specify easy alternatives to those Aristotle proposes. Since he takes scepticism to be a non-starter, and the hypothesis that we might have innate knowledge of empirical scientific laws as ludicrous, Aristotle opts for the doctrine of *nous*: insight founded upon rich and repeated experience, but reaching beyond experience, because reaching to the modality of necessity which is never fully certified by experience alone.

However that may be, Aristotle supposes that once we have gained scientific understanding, we are in a position to package our results in tidy demonstrations. He does *not* think, as he is sometimes

parodied as maintaining, that science proceeds by manufacturing demonstrations out of thin air, or without observation or investigation. Rather, the demonstrations he puts forwards as canonical science are the polished *results* of investigation, made perspicuous by conforming to simple patterns of logical inference.[19] Moreover, the demonstrations he envisages will be explanatory, in the sense that they will not only take canonical valid form, but will reveal the actual causal structures obtaining between the entities described. That is, to present just one simple example, observation shows us that some sea-dwelling creatures have lungs and some do not. Why should that be so? The first answer is simple: some sea-dwellers are mammals (cetacea, like porpoises and whales) and others are not (fishes and crustaceans). This simple answer proposes a connection, an explanatory connection between *being a mammal* and *having lungs*. Their having an explanatory connection is significant for Aristotle, in two respects. The first is that there must be a necessary *connection*, expressible in a simple argument:

1 Necessarily, all mammals have lungs.
2 Necessarily, all whales are mammals.
3 Hence, necessarily, all whales have lungs.

As we have seen, the premises must be necessary if they are to be genuinely scientific. So too, of course, must the connection be necessary.

Yet so much is not sufficient. For, and this is the second respect, we might display necessary premises arranged to exhibit necessary connections without thereby providing a demonstration: a demonstration shows not only *that something is so*, but reveals as well *why it is so* (*APo* 89b23–25, 89b36–90a34). Aristotle contends that in cases where we have necessarily co-extensive classes, for example *animals* and *perceivers*, then one can construct a valid syllogism running in either of two ways. What must be captured in a demonstration, however, is *why* something obtains, *why* it is that what we observe to be the case is the case. When we have uncovered what makes what is the case be the case, then, and only then, will we have displayed the causal structure of the natural world as it presents itself.

3.4 AN OVERVIEW OF ARISTOTELIAN LOGIC

In presenting Aristotle's approach to demonstration, we have several times had recourse to the setting out of *demonstrations* 'in canonical form' or as 'valid arguments' employing necessary premises. If this is a natural way of speaking – if we take it for granted that some arguments are valid and others not – then this is partly due to Aristotle's influence. It is of course not the case that Aristotle *invented* logic any more than Einstein *invented* the principles of relativity theory. Rather, in each case, we are better advised to speak in terms of *discovery*. Even then, however, the claim might be a little strained; for it is not as if the great thinkers who came before Aristotle failed to reason logically – or at times illogically. Aristotle was the first, however, to unearth the basic principles of logical inference, to codify them, and to move some way towards showing the fundamental relations which obtain between some of the main types of logical form. So powerful were his results that even until the time of Kant it could be supposed that Aristotle had said all there was to be said on this topic:

> That from the earliest times logic has travelled a secure course can be seen from the fact that since the time of Aristotle it has not had to go a single step backwards . . . What is further remarkable about logic is that until now it has also been unable to take a single step forward, and therefore seems to all appearance to be finished and complete.[20]

What Kant believed was false, as the great advances in logical theory in the nineteenth and twentieth centuries amply attest; but what Kant believed was not foolish. On the contrary, Aristotle does capture an important cornerstone of logic and he began in a serious and sometimes breathtaking way to undertake the complex programme of explaining how various patterns of logical inference reduce to one another.

Here we will consider only a small representative sample of Aristotle's logical investigations. His logic is today regarded as *term*

logic, that is, the logic which explores the containment relations between the classes referred to or expressed by *terms*. Here, though, some caution is needed. Aristotle does not pause to draw the distinction, but it is clear that he understands his logic to capture not the relations between terms considered as linguistic items, but rather between the items expressed by linguistic items, just as simple propositional logic captures the entailment relations obtaining between propositions considered as the semantic values expressed by assertoric sentences. His primary logical unit is the *syllogism*, and his basic theory of logic is traditionally called *syllogistic*, though Aristotle did not use this term for this purpose. His basic conception of a logically acceptable or valid argument is a *deduction* (*sullogismon*). A deduction is just the sort of argument he has been urging as the preferred vehicle for completed scientific expression, though of course such arguments will also have far wider application. A deduction, says Aristotle, is 'an argument in which when certain things are laid down something else follows of necessity in virtue of their being so' (*APr* 24b18–20). He means that a deduction is the kind of argument in which if premises *p* and *q* are true, something else, r, must also be true, irrespective of the contents of the premises in question, irrespective, indeed, of the question of whether *p* and *q* are in fact true. Thus, consider the schema:

1 All **As** are **Bs**.
2 All **Bs** are **Cs**.
3 Hence, all **As** are **Cs**.

Anything taking this form will be a deduction in Aristotle's sense. Let the **As**, **Bs**, and **Cs** be anything you like (humans, mammals, animals; computers, machines, artifacts; violists, orchestral players, musicians), and if indeed the **As** are **Bs**, and the **Bs Cs**, then perforce the **As** will be **Cs**.

Aristotle's initial interest in deduction is two-fold. First, he wants to explore in a reasonably comprehensive way how many argument forms qualify as deductions, that is, are such that if some premises are true, then some further statement, a conclusion,

must also be true. Second, he makes some effort to argue, rather boldly given the infancy of the subject, that there are a finite number of forms to which all deductions may be reduced by some orderly set of procedures.

As for the first project, it is plain to all, upon a moment's inspection, that some sets of statements are deductions and some are not. We have seen one canonical form of deduction already. If all **As** are **Bs**, and all **Bs Cs**, then so too all **As** are **Cs**. Note that this holds regardless of whether the premises are in fact true. (This is a deduction with a false premise: all dogs are fish; all fish fly; hence, all dogs fly. So too is this, where the conclusion is true, but one premise false: all sopranos are women; all women are singers; so all sopranos are singers.) By contrast, if all **As** are **Bs**, and *some* **Bs Cs**, then it does not follow of necessity that all **As** are **Cs**. (If all sopranos are women, and some women are sales representatives, then it does not follow that all sopranos are sales representatives. Perhaps some are; perhaps none is.) Looked at this way, Aristotle's first question in logic is this: which forms are deductions and which are not? Which sets of premises *guarantee* the truth of their conclusion, on the assumption that they are themselves true?

Aristotle offers an initially simple and elegant account, one which relies upon the different kinds of elementary predications there are. The statement type *All **As** are **Bs*** is a *universal affirmation*, that is a statement which affirms something universal of *all* members of a class in common.[21] We might notice that subjects of affirmations may be individuals (Socrates), partial classes (some women), or universal classes (all women). Further, in addition to affirmations, we may have simple negations of all three sorts (Socrates is not from Mars; some women are not feminists; and no men are rightly enslaved). With just these simple tools, Aristotle builds his syllogistic.

Although it becomes quickly complex, the rudiments of Aristotle's theory can be stated briefly. There are four basic simple predications:[22]

1 All **As** are **Bs**. (All sopranos are women.)
2 No **A** is a **B**. (No soprano is a woman.)

3 Some **As** are **Bs**. (Some sopranos are women.)
4 Some **A** is not **B**. (Some soprano is not a woman.)

Using just these simple predications, Aristotle observes that we can generate a list of possible combinations of predicational complexes, only some of which qualify as deductions.

In *Prior Analytics* i 4–6, he marches through a very wide range of the possible predicational complexes and proves some to be deductions while showing that others are not. He arrives at three basic groupings, or moods as they have been called since the Middle Ages ('moods' in this connection is derived from *modus*, or 'way'), based upon the ways in which subjects and predicates are distributed across the premises.[23] In the first, and simplest mood, the subject of one premise is the predicate of another (thus, all **As** are **Bs**; all **Bs** are **Cs**); in the second, premises have the same predicate (thus, all **As** are **Bs**; no **Cs** are **Bs**); and in the third, the premises have the same subject (thus, no **As** are **Bs**; some **As** are **Cs**).

Focusing on just the first and simplest mood, which he introduces as the most basic and natural, we can see how Aristotle proceeds. The most obvious deduction is the one we have been featuring: all **As** are **Bs**; all **Bs Cs**; and so, all **As** are **Cs**. This is in the first mood because the predicate of the first premise is the subject of the second. Now, contends Aristotle, it is possible to run through every possible combination of propositions displaying this basic distribution. If we vary the *quantity* of the subject (universal *all* vs. indeterminate *some*) along with the *quality* or kind of the predication (positive versus negative), we arrive at all the possible combinations in the first mood, of which the following is a representative subset:

1 All **As** are **Bs**
  All **Bs** are **Cs**
  So, all **As** are **Cs**
2 Some **As** are **Bs**
  All **Bs** are **Cs**
  So, some **As** are **Cs**

3 All **As** are **Bs**
Some **Bs** are **Cs**
So, all **As** are **Cs**
4 No **As** are **Bs**
Some **Bs** are **Cs**
So, some **As** are **Cs**

It should be observed that among the possible variations some are deductions and some are not. (1), as we have seen, is a deduction. By contrast, (3) is not: it might be the case that the premises are true, while the conclusion false. For example, it might be true that all sopranos are women and that some women are Italian without its also being the case that all sopranos are Italian.

Now, interestingly, one can see directly that some of the possible distributions in the first mood are deductions and some are not. It is plain even upon a moment's reflection that (1) is while (3) is not. This will hardly be so when we move into the second and third moods, where we may be presented with such arcane structures as:

5 Some **As** are not **Bs**
All **As** are not **Cs**
So, some **Bs** are not **Cs**
6 Some **As** are not **Cs**
All **Bs** are **Cs**
So, some **As** are not **Bs**

It will not be obvious to most people, at least not without some careful reflection, whether these forms qualify as deductions. Since he wishes to determine whether each and every possible structure across the three moods is a deduction, Aristotle needs to develop a procedure to be deployed in the non-obvious cases. He employs several different techniques.

On the positive side, he begins with the thought that we can rely on the correctness and naturalness of the deductions in the first mood. He supposes, that is, that for some of them, no proof is needed. His first thought, then, is that if he can show that the

inferences obey the deductions of the first mood, the more arcane forms are also deductions. This is not possible in every case. So, he adduces three simple, and, he thinks, intuitively correct conversion principles, and argues that it is possible to determine which sorts of statements follow from which in terms of them.[24] We can also, on the negative side, take a clue from the manner in which we saw immediately that (3) was not a deduction. We produced a counterexample, that is, an instance of some predications in that very form such that the premises were both true and the conclusion false. The method introduced by Aristotle in this connection is very much the same method taught to beginning logic students today, whether or not they are studying term logic (and mainly they are not): when we can find a distribution of truth values such that the premises are true and the conclusion false, then the argument structure is *invalid*.

It is salutary to observe Aristotle marching through the figures seriatim in *Prior Analytics* i 4–6, if only for the purpose of witnessing the kind of relentless acuity his tireless mind is capable of producing. In fact, all and only the combinations he concludes are deductions are valid. From the standpoint of modern logic, however, it is more important to appreciate two more general features of Aristotle's logic. First, in the process of considering the various argument types within his three moods, he spontaneously produces a set of meta-theorems, that is, a set of theorems which describe in the abstract general rules of acceptability in argument schema. These include *inter alia*: (i) that no deduction contains two negative premises; (ii) a deduction with a negative conclusion must have a negative premise; (iii) a deduction with a universal conclusion requires two universal premises; and (iv) a deduction with a negative conclusion requires exactly one negative premise. These are *meta*-theorems in the sense that they are theorems to the effect that arguments must obey various sorts of expressible rules if they are to qualify as deductions. Still, most of these rules are fairly humble, and Aristotle offers them in the spirit of operational principles rather than proven theorems.

More impressive is one meta-theorem for which he does offer a proof. He argues that all arguments of the second and third moods

can be reduced to the two universal deductions of the first figure, so that we can be assured that all deductions are valid, even when their validity is difficult to grasp. For the two universal deductions of the first mood are, in Aristotle's terminology, *perfect*, by which he evidently means minimally that they are such that their validity may be grasped directly. Thus, as we have seen, we appreciate straightaway that if all **As** are **Bs**, and all **Bs Cs**, all **As** are **Cs**. If we can appreciate further the meta-theoretical result that every deduction can be reduced to this and one other equally intuitive deduction, then we have grounds for agreeing that every deduction has an equal force of necessity about it.

Now, this is not the only meta-theoretical result proven by Aristotle. Rather, he offers a bundle of proofs in the last chapter of *Prior Analytics* i, trailing into *Prior Analytics* ii. Nor is his logic exhausted by term logic. For he also develops a modal logic, that is, a logic which adds to the assertoric character of his syllogistic the modal notions of *necessity* and *possibility*. His treatment here is less well received, partly because it is comparatively inchoate and partly because Aristotle works with a conception of possibility which is mainly alien to contemporary modal logics. In contemporary modal logic, we interdefine possibility and necessity, accepting one or the other, indifferently, as primitive:

x is possible $=_{df}$ not necessarily not x

or

x is necessary $=_{df}$ not possibly not x.

Although he is aware of this approach to modality (*De Interp.* 22a14–3i; *APr* 25a37–40, 32a18–21), Aristotle eschews it in favour of another conception of possibility, comparatively cumbersome from the formal standpoint, according to which:

x is possible $=_{df}$ not necessarily x and not necessarily not x.

Now, it is not as if no notion of possibility is definable in this way.

In fact, one common form of possibility seems to take just this form. For example, it would be odd if, when asked whether a ball will fall when dropped, we were to answer, 'Well, possibly', even while believing that laws of nature are necessary. The oddness in such a response results from treating possibility as entailed by actuality and actuality as entailed by necessity. Still, in modern modal logic, since necessarily *p* entails *p*, and *p* entails possibly *p*, we are entitled, from a logical point of view, in answering just this way. By contrast, on Aristotle's approach to the modality of possibility, if we know that *p* is necessarily the case, we are not only remiss but wrong to assert that *p* is also possibly the case.

That acknowledged, even while conforming to one sort of reasonable conversational convention, Aristotle's approach to modality does issue in an immediately unwelcome result. Since he allows that necessary premises imply their assertoric counterparts, that is, that necessarily *p* entails *p*, Aristotle must deny that *p* entails possibly *p*. This in turn leads to undue complexities in his various attempts to use proofs involving appeals to impossibility.

Now, so much is not intended to condemn Aristotle's modal syllogistic. On the contrary, like the assertoric syllogistic, Aristotle's modal syllogistic contains an arresting amount of original logic. To work through the details of his account of modal syllogistic is to witness the flowering of a mind of logical dexterity manifesting staggering originality and acumen.[25]

This is all the more impressive since Aristotle does not appear to be interested in logic for its own sake. Rather, he pursues his logical investigations primarily because he is interested in human knowledge, and hence in truth. He pursues his theory of syllogistic, he implies, not in an effort to present a complete system of logic for its own sake, but because he is keen to develop codified principles of correct reasoning for the use of science, broadly construed. If we wish to present a completed science perspicuously, then we must advance its theses in demonstrations taking the form of deductions; for if they were not deductions, the demonstrations of science would not be guaranteed to be truth-preserving – and this, Aristotle demands, they must be.

3.5 DIALECTIC

Aristotle appreciates that not all defensible human reasoning is deductive in character. Thus, in addition to his syllogistic, he spends a good deal of time investigating *induction* (*epagogê*; *APr* 68b9–36). Nor is all human reasoning completed in the way it must be if scientific presentation is to result. On the contrary, most of our actual reasoning involves our working from premises which are not necessary, or not known to be necessary, but are instead merely probable and are endorsed widely and reasonably, or, if not widely, then at least by most reflective individuals. Thus, suggests Aristotle, we need some 'method by which we will be able to reason deductively about any matter proposed to us on the basis of credible beliefs (*endoxa*),[26] and to give an account of ourselves [when under examination ourselves] without lapsing into contradiction' (*Top.* 100a18–20). Arguing deductively, of course, means arguing validly, though not by means of demonstration.[27] For demonstrations, unlike deductions, require necessarily true and causally explanatory premises in addition to mere deduction.

In suggesting that there is a form of reasoning which relies upon *endoxa*, but is nevertheless deductive in character, Aristotle signals that argumentation very often proceeds on the basis of premises which are broadly accepted, or at least accepted by those best placed to know about them, and are to this extent entrenched or credible or reputable (*Top.* 100b21–23). So, not all reasoning is demonstrative in the technical sense required by science. The form of reasoning relying upon credible beliefs Aristotle calls *dialectic*. Dialectic seems to have two related roles to play in the non-scientific sphere, one destructive and one constructive: (i) it permits us to determine when someone is arguing fallaciously – destructive dialectic; and (ii) it permits us to make progress in the absence of completed science – constructive dialectic.

Now, one may wonder why Aristotle thinks that he needs to discuss dialectic as a separate topic at all. Given that we have seen that science requires demonstration, that is, deduction made on the basis of premises of a suitable sort, and that deduction can be

handled completely in terms of the rules of syllogistic, there may seem little need to pursue dialectic independently. Is it not simply deduction ranging over a certain type of non-scientific premise? Surely, the rules of deduction apply here, since they are blind to the content of the premises in play. Since we already have syllogistic, what more needs to be added?

This is a fair question. One can begin to approach this question by recalling first what needed to be added to deduction to yield genuine demonstration, namely, suitably scientific premises advanced so as to capture and display genuine causal priority. Deduction without universally necessary premises arrayed to reveal causal priority is not science. Dialectic is analogous to demonstration – absent the strictures regarding the scientific character of the premises and the need for causal perspicuity. What needs to be added to deduction in the case of dialectic is some sense of the non-causal considerations governing acceptability of inference, even when validity is not an issue. To take first a relatively clear and easy case, imagine an American Vice-President who argues that as the world's leading nation America should be given preferential treatment in terms of world energy consumption and, when pressed, offers as grounds for this judgment that the United States, being the world's most important country, *ought* to receive privileged treatment with respect to the allocation of world energy resources. The American Vice-President, to his credit, offers us a perfectly valid argument: *p* surely entails *p*. He might nonetheless be called to task for offering an argument which makes no progress whatsoever, which is circular and uninformative. His is an argument which, though valid, is worse than merely non-scientific. It is not only not a demonstration: the argument makes no progress of any kind whatsoever. Dialectic is charged with monitoring the progress of argumentation which, even if valid, is nonetheless objectionable; conversely, on the positive side of the coin, it concerns itself with arguments which though non-demonstrative nonetheless make progress towards establishing truths which all reflective rational beings rightly accept.

Aristotle sketches the role of dialectic near the beginning of his early work, the *Topics*:

> Dialectic is useful for three purposes: for training, for conversational exchange, and for sciences of a philosophical sort. That it is useful for training purposes is directly evident on the basis of these considerations: once we have a direction for our inquiry we will more readily be able to engage a subject proposed to us. It is useful for conversational exchange because once we have enumerated the beliefs of the many, we shall engage them not on the basis of the convictions of others but on the basis of their own; and we shall re-orient them whenever they appear to have said something incorrect to us. It is useful for philosophical sorts of sciences because when we are able to run through the puzzles on both sides of an issue we more readily perceive what is true and what is false. Further, it is useful for uncovering what is primary among the commitments of a science. For it is impossible to say anything regarding the first principles of a science on the basis of the first principles proper to the very science under discussion, since among all the commitments of a science, the first principles are the primary ones. This comes rather, necessarily, from discussion of the credible beliefs (*endoxa*) belonging to the science. This is peculiar to dialectic, or is at least most proper to it. For since it is what cross-examines, dialectic contains the way to the first principles of all inquiries.
>
> (*Top.* 101a26-b4)

He identifies three main functions of dialectic, the first two of which are rather humble and limited. The third, especially as Aristotle here expands it, is rather more encompassing and ambitious.

Dialectic is useful in training for the simple reason that it affords novices the ability to develop productive intellectual habits and to secure their methods of inquiry. The second function is only slightly more expansive. Once a discussion of some topic is joined, it serves the interests of all parties to run through the basic, common opinions accepted by the interlocutors. For so much is a kind of control on the likely direction the discourse may take. If an interlocutor is permitted to draw indifferently upon just any presuppositions, regardless of their credibility or indeed their provenance, then the discussion is likely to descend into idle

polemic. Accordingly, if the goal is truth rather than local victory, it will behove all parties to sort through the accepted presuppositions before getting under way, since dialectic operates under the constraint of deduction; and, as we have seen, relative to a premise set, whether a deduction obtains or not is not a matter within our control. Consequently, if we constrain the set of credible opinions from which we are permitted to operate, we will likewise constrain our range of conclusions. Here too, then, dialectic offers a valuable, if limited service to inquiry. Still, if it serves non-trivial purposes in either of these first two roles, in neither does dialectic promise anything terribly momentous.

The third function of dialectic is, by contrast, much more ambitious in its orientation. Considering that the ideal of perfected scientific presentation is almost nowhere realized in Aristotle's surviving works, one might well wonder how he regards his actual output. If the ideal within a science is demonstration from first principles, with all that requires,[28] then we should not, perhaps, be surprised that we do not find Aristotle reaching that ideal in his philosophical investigations. In any event, we do not find the ideals of scientific presentation outlined in the *Posterior Analytics* clearly in evidence in his surviving philosophical works, even if we do see clear implications of that work at play in his philosophy. Clearly, at the same time, Aristotle does not in these works understand himself to be indulging in unstructured and unregenerate philosophical reverie. The last function of dialectic provides some clue to his actual method in philosophy. It is noteworthy that he supposes – some may think with an undue optimism – that dialectic equips us with the ability to discern what is true and what is false. His thought seems to be that by clearing the ground clutter and subjecting the credible opinions in a domain to searing scrutiny, the light of reason will land upon the truth by leading us to the correct first principles in the domain of discourse under investigation. This is a far more active role for dialectic than the mere refutation of what is false and confused in the views of others.

Significantly, in this passage and elsewhere, Aristotle calls for a multi-stage process of dialectic in its most constructive guise.

Because this process seems to be in plain view in at least some of Aristotle's philosophical writings, it is reasonable to assume that he envisages a fairly broad role for dialectic, or, as he says, 'for sciences of a philosophical sort', or perhaps, 'for science conducted in a philosophical manner' (*pros tas kata philosphian epistêmas*; *Top*. 101a27–28, 101a34). Evidently, although the matter is disputed, these sciences are those we actually encounter in Aristotle's great philosophical works, including the *Physics*, *Metaphysics*, *De Anima*, and *Nicomachean Ethics*. It is consequently important to understand how he conceives his method of dialectic to be operative in these works.

In the *Topics* Aristotle advertises three benefits of dialectic when it is practised in the philosophical sciences in particular:

- Dialectic facilitates sorting through the *endoxa*, or credible beliefs, regarding a philosophical puzzle, because it keeps us alert to the truth.
- Dialectic cross-examines such beliefs by submitting them to canons of reason and inference which, while not scientific (because not fully causal), do manage to sort acceptable valid inferences from those which are unacceptable, despite their validity.
- Finally, dialectic also helps us to uncover the first principles of science, those starting points assumed and accepted by the science but not investigated by it. Dialectic, says Aristotle, holds the way to first principles (*Topics* 100a18–b4).

In these three interlocking and mutually supportive ways, dialectic puts us on the road to truth.

Dialectic helps us sort through the puzzles on either side of an issue. As we have seen,[29] Aristotle regards it as reasonable to begin an inquiry by sorting through the *endoxa*, or credible beliefs, on either side of an issue. This we find him doing, for instance, in the *Physics*, when he puzzles about whether the infinite exists: he first collects reasons for both positive and negative answers to this question and then begins to sift through them in an effort to see which, if any, should be credited.[30] Since we find him proceeding

in this way in his standard philosophical works, it is reasonable, if not indisputable, to assume that he is pursuing dialectic in these works. If that is so, then we must understand dialectic as playing a central role in philosophical theorizing as Aristotle conceives and practises it.

One role it plays is reflected in Aristotle's intriguing suggestion that dialectic 'is a road to first principles' (*Top.* 101b3–4). It is initially unclear how this might be so, unless by serendipity. Aristotle has so far contrasted genuine science (*epistêmê*) with dialectic primarily by demanding that science rest on secure and necessary first principles, while dialectic relies upon *endoxa*, widely held or credible beliefs – which however widely held or however warmly commended by the many or the wise may yet be false. (It was not so very long ago that all, including the wisest among us, insisted upon a geocentric view of the universe.) So much recommends caution about the conclusions of dialectic, since they may be well wide of the mark, and thus surely not necessary, because not even true. It thus seems puzzling that Aristotle should construe dialectic as a road to first principles; beginning as it does with *endoxa*, it *might* sometimes lead us to first principles, if we are lucky, but it might just as often lead us nowhere near the land of truth. If dialectic cannot guarantee the truth of *its own* starting points, namely *endoxa*, then how can it lead securely to first principles, which are true and necessary? The question takes on some urgency when we come to appreciate that the central works today studied as Aristotle's philosophy are evidently exercises in dialectic. In those works, we hardly find Aristotle employing anything like his stated and preferred idiom for science. To be sure, in any event, they do not respect the strictures for the orderly presentation of finished science laid down in the *Posterior Analytics*.

Two possibilities present themselves. One, a more traditional approach to Aristotle, treats the last chapter of the *Posterior Analytics* as his final word on the matter. As suggested briefly above,[31] Aristotle might simply assume that with enough experience, hard work, and measured reflection, we can grasp the truths the rational universe presents. That is, we sometimes achieve *nous*, or

understanding, when we bring ourselves to the point where we can grasp the first principles of the basic sciences. Now we may add to this that dialectic is a road to this end because it helps us to systematize beliefs, to subject them to scrutiny, and measure them against other beliefs, whether empirically formed or rationally generated. On this approach dialectic would not be the sole road to first principles, nor a road travelled without the aid of investigation and experience. For the sort of route described in *Posterior Analytics* ii 19 would also remain available.[32] Nor again would dialectic be an unswervingly dependable road, leading surely and securely to first principles. Still, it would be *a* road, and would help humans in the process of uncovering first principles by submitting the beliefs with which we begin to theorize to rationally reflective scrutiny. In this sense, dialectic might well lead towards first principles without serendipity: no doubt dialectic is fallible, but that is just to say that scientific progress is slow and difficult, and the road to its most secure first principles fraught with epistemic perils and successful, if at all, only by increments.

Some theorists have been unhappy with this picture of dialectic and its role in philosophy.[33] Their sources of dissatisfaction have been various, but include prominently that there is something mysterious, even occult-sounding about Aristotle's doctrine of *nous* in the last chapter of the *Posterior Analytics*. Their concern is that understanding (*nous*), the intuitive grasping of first principles at the moment of insight proposed on this approach, merely papers over a difficulty by labelling an otherwise uncharacterized finale to an often mystifying progression. They complain that suggestions to the effect that we merely *see* or *grasp* first principles when presented them are unhelpfully metaphorical, relying on a perceptual model of intellection which cannot be made readily literal or in any way perspicuous. Further, given that Aristotle expects his explanations to be perfectly objective,[34] dialectic proves an inept epistemology, a method not up to the task of the demands of metaphysical realism it is introduced to serve precisely because its own starting points may be radically misguided.

Whatever the ultimate force of such concerns, they do prompt a second conception of dialectic which some find deployed in

Aristotle's more mature writings. Perhaps dialectic can lead us to starting points of a very fundamental sort, principles not merely drawn from credible beliefs (*endoxa*) but presupposed by rational inquiry as such. This form of dialectic would depart from canonical dialectic as we have characterized it. Instead of being restricted to the *endoxa*, it would rely on arguments which, while not demonstrative in the strict sense required of scientific demonstration,[35] would nonetheless offer indirect demonstrations, including demonstrations of first principles. For example, dialectic might argue that there are principles whose denial presupposes the truth of those very principles, so that any attempt to deny them will prove immediately self-undermining. Candidate principles would include the basic principles of logic, such as the principle of non-contradiction,[36] which obviously could not be established by direct logical argument, since any such argument would plainly presuppose the very principle under consideration. Still, a defender might yet proceed indirectly, by means of a dialectical argument.

If this strengthened form of dialectic is indeed available to Aristotle, then he could make good on his contention that dialectic leads to first principles without relying on a doctrine of intuitive understanding, or *nous*. This would have the benefit, as some see it, of avoiding the mysteries surrounding that doctrine. Others, finding the notion of intuitive understanding not so very mysterious – and even familiar and paradigmatic in mathematical reasoning and proof construction – have had no qualms about exporting it to less formal and syntactic disciplines, including the traditionally *a priori* areas of philosophy in which we find Aristotle engaging, including especially his metaphysics. On either approach, Aristotle would be justified in claiming that dialectic is a road to first principles; and his search for essence-specifying definitions might defensibly proceed by relying on this method.

3.6 UNIVOCITY AND HOMONYMY

The sundry sciences presuppose secure principles in their foundations. Thus it is expected that the science of optics will have a

settled account of *what light is* – or, to use our earlier formulation, of the essence-specifying definition of light. Even if physicists involved with issues concerning the peculiar features of light at a more fine-grained level remain perplexed, those working in optics presuppose a settled definition in their investigations and have no difficulty applying it to uncontroversial instances of light. So much may seem unobjectionable.

Typically, though, matters become more controversial when we move from the realm of natural science to philosophy. One might (rightly or wrongly) suppose that light is, so to speak, ready-made, that scientists are constrained in their definitions of light by what the empirical universe provides. If a theory fails to describe the some range of electromagnetic radiation accurately and completely, then some scientist has propounded a false or incomplete account. Better science then supplants inferior science with superior theory, the one which in fact captures the deep structure of the natural universe and advances towards a complete essence-specifying definition. Philosophy, it may be thought, admits of no such linear progression. When three philosophers disagree about the nature of human happiness, for example, nothing is ultimately given. One says that is pleasure, another the life of action and honour, and another a life of quite repose in the garden. There is nothing, one may easily suppose, which constrains two of them to concede to the third by admitting that their theories were, upon more minute investigation, incorrect and untenable.

Even when it is admitted, as surely it must be, that so much involves a radical oversimplification of the character of scientific process as well as a jejune depiction of all serious philosophy, the suspicion lingers that philosophy, despite its lofty aspirations, does not admit of the sorts of definition it seeks. It is now, after all, a long time since Socrates conceded that the knowledge he sought when asking philosophical questions might outstrip human abilities, that it might be available only to the gods with their far-seeing ways (*APo* 20d–21a). Evidently, then, the sort of answer Socrates wanted when asking about the nature of justice or courage or love was more than the merely lexical: he wanted deep, essence-specifying definitions in response to his questions.[37]

Much of what Aristotle has offered in his accounts of scientific thinking reflects his shared hope and expectation that such knowledge is attainable by humans. The theory of scientific explanation offered in the *Posterior Analytics*, recall, expects the premises of deductions to be necessary and universal, to capture and display what is essential to the domain under investigation (*APo* 71b16–25, 77b5–73a6; *Meta*. 981a5–30, 1006a6–18, 1039b27–1040a7). Such premises are, supposes, within the ken of human consciousness.

Aristotle therefore also presupposes for a broad range of sciences that the definitions captured in their basic principles will be *univocal*. That is, Aristotle assumes that, for example, the definition of human beings will be both non-disjunctive and unified (Cat. 1a1–11). More formally, he assumes that various predicates in science apply univocally, where:

> *a* and *b* are univocally F iff: (i) *a* is F; (ii) *b* is F; and (iii) the accounts of F-ness in '*a* is F' and '*b* is F' are the same.

In presupposing univocity for scientific demonstration, Aristotle seems to agree with the Socrates of the *Meno* who, in a non-scientific context, undertakes to define the nature of virtue (*aretê*). In that dialogue, Socrates first asks Meno whether he knows what virtue is, and Meno, responding in the affirmative, begins to catalogue the many kinds of virtue he knows (*Meno* 71e1–72a5). The virtue of a man resides in his being able to manage public affairs while benefiting his friends and harming his enemies; that of a woman in her managing her home well and in a manner submissive to her husband; while the virtue of others diverges again and again depending upon whether we are considering slaves or free men, children or the elderly, and so on. Socrates quips in response, 'I am in luck, Meno, while I am seeking but one virtue, I have found you to have a whole swarm of them' (*Meno* 72a–b). He then elicits from Meno a commitment to seek *the single form* which makes all instances of virtue qualify as virtue (*Meno* 72c–73d).

In this way, Socrates insists on univocity, issuing a demand to which Meno need not have acquiesced. After all, Meno might

simply have denied that there is any one thing which all and only instances of virtue have in common, something whose presence makes all cases of virtue virtuous. He might then have proceeded to a disjunctive definition of the following form:

> x is an instance of virtue $=_{df}$ (i) x is a man managing his public affairs well; or (ii) x is a woman managing her household well; or (iii) x is a master ordering his slaves appropriately; or (iv) x is a slave obeying his master appropriately; or (v). . .

Socrates would be displeased with this sort of approach, and on two perfectly reasonable grounds. First, there is the nagging suspicion, which afflicts especially philosophers and scientists, that *something* must account for the fact that these various instances of virtue all qualify as virtue. (Compare the question with which we began the chapter: what makes something a star? The question seems already to presuppose univocity.) Second, more importantly, there is the formal point that the ellipsis, the ' . . . ' at the end of the definition implicitly acknowledges that we do not know how to close this disjunctive definition. We might always want to add another instance (the virtue of the gods, the virtue of a French waiter, the virtue of a Member of Parliament, the virtue of a deep-sea diver, the virtue of a *Heldentenor* . . .). Thus, we never know when our definition is complete. On the other hand, if we think we can find a principled way to end the definition, then presumably Socrates was right all along to suppose that there was something, some one thing, in terms of which all cases of virtue qualify as a virtue. In that case, however, we can simply name it, with the result that we never needed the disjunctive definition in the first place. Taking all that together, the Socratic impulse for univocity rejects disjunctive definitions as inadequate or unnecessary, in favour of univocity. Socrates, then, has been holding out for something better.

Some will say that we have been waiting a long time for Socrates to succeed – too long, in fact. The reason we have been waiting is that the wanted univocal definitions are not forthcoming.

In any event, they are not coming from philosophy. In natural science, perhaps, yes. In philosophy, by contrast, no. Thus, insofar as Aristotle expects his completed sciences to embrace the univocity assumption, he will be thwarted once he moves beyond the domain of natural science. In fact, Aristotle's attitude is complex in interesting and demanding ways; a full appreciation of his contribution to philosophy requires a careful parsing of his views.

On the one hand, Aristotle shares the scepticism of those inclined to cast a wary glance at Socratic and Platonic univocity strictures. So, looking in one direction, Aristotle has a primarily negative and destructive demeanour when it comes to the prospects of univocity. He doubts that Plato will discover and display Forms whose unitary non-disjunctive definitions will put on display what it is that makes, for instance, all virtuous actions virtuous, or all good things good. While he is respectful of the Platonic aspirations in pursuing philosophical explanation, he is regularly dubious about the prospects of univocity in a given philosophical domain. An illustrative example concerns Aristotle's attitude toward Plato's conception of goodness. In his *Nicomachean Ethics*, Aristotle contends, in a cordial, even affectionate criticism of Plato, that we simply will not uncover the single, non-disjunctive definition of *goodness*, which precisely what a univocity-obsessed Platonist might hope to provide. As he maintains:

> We had perhaps better consider the universal good and run through the puzzles concerning what is meant by it – even though this sort of investigation is unwelcome to us, because those who introduced the Forms are friends of ours. Yet presumably it would be the better course to destroy even what is close to us, as something necessary for preserving the truth – and all the more so, given that we are philosophers. For though we love them both, piety bids us to honour the truth before our friends.
>
> (*EN* 1096a11–16)

Aristotle proceeds to assail, and, he thinks, refute, the characteristically Platonic suggestion, rooted directly in the univocity

assumption, that goodness is 'something universal, common to all good things, and single' (*EN* 1096a28).

Aristotle argues that there is no such goodness, that there is no one thing, Goodness Itself, whose presence makes all good things good. He offers two sorts of considerations for non-univocity, one fairly technical and the other less so. The more technical of his arguments relies upon features of his category theory, to the effect that just as there are irreducibly distinct kinds of beings, so there are irreducibly many kinds of goods: 'the good', says Aristotle, 'is said in as many ways as being is'. Although a full appraisal of this suggestion awaits a consideration of Aristotle's theory of categories,[38] the root idea is simple enough. Just as, say, a *person*, a *time*, and a *place* are different kinds of beings, so what it is to be good in the case of persons, times, and places will differ. A good person is, let us say, a moral person, while a good time is a propitious or opportune time, whereas a good place might be a suitable or beautiful locale. Since being beautiful is not the same as being opportune, and being opportune is not the same as being moral, there is no one univocal sense of goodness across the categories of being. Of course, one may wonder whether Plato is constrained to agree both that goodness is as variegated as being is *and* that being is in fact itself non-univocal. This latter point seems especially controversial.[39] In any event, this argument relies upon a doctrine of categories of being and will be only as strong as such a doctrine itself proves to be.

The second, less technical method for divining non-univocity is deployed in Aristotle's *Topics*, the work in which he does much to characterize and clarify the nature of dialectic.[40] In this work, we can find grist for his mill which makes no implicit appeal to the theory of categories. The idea in the *Topics* is that we can use paraphrase or antonym tests to uncover non-univocity where it might be lurking unnoticed. Consider first the following predications of 'good':

1 Socrates is good.
2 Considered against its alternatives, nationalized health-care is good.

3 The prognosis for five-year survival is not good.
4 You might be surprised to learn it, but ginger ice-cream is really good.
5 Even if smoking is bad for you, a well-made cigar after dinner is good.
6 No, Pele is great; Beckham is good.

Each of these predications is perfectly understandable. Upon inspection, though, says Aristotle, we should understand different things by them, as the following exercise in paraphrase reveals:

1 Socrates is *a moral person*.
2 Considered against its alternatives, nationalized health-care is a *humane social policy*.
3 The prognosis for five-year survival provides no *grounds for optimism*.
4 You might be surprised, but ginger ice-cream *has a very agreeable taste*.
5 Even if smoking is bad for you, a well-made cigar after dinner is *pleasurable*.
6 No, Pele is great; Beckham *plays football to a high but not legendary standard*.

As these paraphrases reveal, the predicate ' . . . is good' is simply a convenient short-hand for a variety of non-equivalent predicates. If that is so, suggests Aristotle, we should not demand or even expect univocity. If we do, we have been misled by a grammatical superficiality. Even simple semantic reflection reveals complexity just below the surface.[41]

So much, if correct, would be significant, but mainly in a destructive sort of way. That is, if Aristotle's various tests for non-univocity succeed, he will be justified in undercutting what he thinks of as characteristically Platonic presumptions of univocity. Note, however, that the sword of non-univocity cuts two ways. Insofar as Aristotelian science relies on premises which are necessary, better known by nature, and prior, it too presupposes univocity. Now, the mere visage of non-univocity need not

cripple Aristotle's scientific and dialectical programmes. On the contrary, each instance of analysis must be assessed on its own. If *being human* admits of a univocal definition, then no non-univocity test will successfully uncover hidden multiplicity.

More importantly, and strikingly, Aristotle does not think that mere non-univocity is sufficient to undermine philosophical progress. For there may be, Aristotle contends, a *tertium quid* between univocity and what we may call *rank non-univocity*. Although the point has gone underappreciated by a fair bit of contemporary philosophy, especially that school beholden to Wittgenstein's colourful suggestions about family resemblances, Aristotle is surely right, as a formal matter, to insist that the alternatives are not exhausted by univocity at one end and rank non-univocity at the other, with family resemblances holding down the middle. For many contemporary thinkers, when we discover non-univocity, we may find ourselves judging ourselves to have identified either rank non-univocity or mere family resemblance. Thus, in the first case, when we see (and we need hardly discover) that 'bank' applies differently to financial institutions and the sides of rivers, then we will have no inclination to search for a univocal definition. This is a case of *rank non-univocity*.

Still, we might not be prepared to make such a judgment in the case of some other predicates, for instance, 'is art'. We might agree that the predicate applies differently to operas, paintings, plays, lieder recitals, jazz sets, and filigree architectural embellishments. Nonetheless, we would normally be disinclined to treat these as cases of rank non-univocity: they all qualify as *art*, though not in the way that the sides of rivers and financial institutions qualify as *banks*. One thought is that they are neither univocally art nor rankly non-univocal. Perhaps they have overlapping, crisscrossing sets of shared traits, such that no one trait is had by them all, but sufficient numbers are shared by enough of them that we place them into a family-resemblance category. So, put in a linguistic idiom, 'art' is a non-univocal predicate but not therefore a case of rank ambiguity, or, put in a non-linguistic idiom, *art* is a family-resemblance kind. Perhaps we will think this way because we see no other alternative between univocity and rank non-univocity.

Aristotle strongly disagrees. To use a favourite example of his (*Meta*. 1003a34–b4), put once again in a linguistic idiom, consider the following predications:

1 Socrates is healthy.
2 Socrates' complexion is healthy.
3 Socrates' diet is healthy.
4 Socrates' constitution is healthy.

Aristotle suggests that one can see straightaway two things about 'is healthy' in these applications. First, it is not univocal. What it is for Socrates to be healthy is not the same as what it is for his complexion to be healthy. Even so, second, the predications are not instances of rank non-univocity. Instead, they are connected in various ways. Finally, then, Aristotle expects his readers to see a third thing about the predicate in these applications: they are not related in haphazard or mere family resemblance ways, but are instead systematic and co-ordinated in their connections.

Most significantly, the predications in (2)–(4) depend in an asymmetric way on the predication in (1). That is, to say that Socrates' complexion is healthy is to say that his complexion *is indicative of Socrates' being healthy*. Similarly, to say that Socrates' diet is healthy is to say that his diet *is productive of Socrates' being healthy*. By contrast, whatever the appropriate account of 'is healthy' in (1), its analysis need not, and indeed will not, make reference to the facets of Socrates' diet or complexion mentioned in (2) and (3). So, the accounts of the predicates in (2)–(4) depend upon what we may call the *core* instance of the predicate in (1).

If we are persuaded by so much, then we are favourably disposed to Aristotle's most central and significant proposal about the prospects of philosophy and dialectic in the face of non-univocity, namely *core-dependent homonymy*. When he speaks of homonyms in this context, Aristotle means something precise:

> *a* and *b* are homonymously F *iff*: (i) *a* is F; (ii) *b* is F; (iii) the accounts of F-ness in '*a* is F' and '*b* is F' do not completely overlap.

If we find, as precluded by (iii), that two accounts overlap completely, then we have a case of univocity. If, by contrast, we find that two accounts do not overlap in any way, then we have a case of rank non-univocity. If we find that they are related but, as (iii) requires, do not converge completely, then we have some form of connected homonymy. If the connection is core-dependent, then we have a case of *core-dependent homonymy*:

> *a* and *b* are homonymously F in a core-dependent way *iff*: (i) *a* is F; (ii) *b* is F; (iii) the accounts of F-ness in '*a* is F' and '*b* is F' do not completely overlap; and (iv) the account of F in 'b is F' necessarily makes reference to the account of F in 'a is F' in an asymmetrical way (or *vice versa*).

To illustrate, again relying on Aristotle's own preferred illustration:

1 Socrates is healthy.
2 Socrates' complexion is healthy.

The predicate 'is healthy' in (1) and (2) constitutes an instance of core-dependent homonymy because the accounts of 'healthy' in these applications do not completely overlap (for then we would have univocity), but they are connected in such a way that an account of 'healthy' in (2) would perforce make reference to the account of 'healthy' in (1), though the account of the predicate in (1) need not and so will not advert to the account in (2).

As a formal matter, it seems incontestable that Aristotle has identified some logical space between univocity and rank non-univocity which is yet distinct from unstructured family resemblance. Now, if the space becomes filled with substantive analyses, then the framework justifies such complexity as it introduces by bearing philosophical fruit. Of course, it is impossible to know in advance whether the apparatus of core-dependent homonymy will be applicable in all the cases Aristotle contends that it will. What is not impossible to know in advance is that Aristotle in fact deploys it in a vast array of cases. *Inter alia*, he claims directly or suggests indirectly that the following core philosophical concepts, though

non-univocal, exhibit core-dependent homonymy: *cause*, *principle*, *whole*, *life*, *body*, *part*, *friendship*, *responsibility*, *justice*, *knowledge*, and *love*.[42] Strikingly, and more abstractly, he extends the apparatus of core-dependent homonymy to *goodness* and, most notably, *being*.[43] Of course, in each of these cases, the defensibility of Aristotle's appeals to homonymy cannot be known or assessed in advance. Rather, they must be judged on a case-by-case basis, in each instance by fending off the correlative and opposed poles of univocity and unstructured conceptual disarray.

3.7 CONCLUSIONS

As a natural scientist and philosopher, Aristotle places a premium on clarity of thought and expression; on logical acumen and rigour; on epistemic transparency; and on forthrightness in the presentation of first principles. He expects those engaged in serious inquiry either to join with him in these commitments or to provide a compelling reason to proceed otherwise. Assuming as he does that no such reason is forthcoming, Aristotle devises a framework of scientific explanation which strives to realize these ideals: he seeks to express the results of scientific investigation so far as possible in canonically defensible argument patterns, namely demonstrations, where demonstrations are deductions, logically valid inference patterns with premises that are necessary, better known than their conclusions, universal in scope, and also such that they display the causal structure of the world. Still, however worthwhile this ideal may be in the expression of a completed science, whether natural or otherwise, Aristotle is clear that much of our actual philosophical activity, whether destructive or constructive, takes the form of dialectic. Dialectic itself admits of various kinds, the most central of which finds its expression in those sciences conducted in a philosophical manner (*Top.* 101a27–28, 101a34). At its best, he urges, dialectic may serve as a pathway to first principles, and can thus propel us down the track to truth.

Even so, it will not always do so, even in its best incarnation, since dialectic is no guarantor of truth. More importantly, when we begin the arduous process of philosophical investigation and

analysis, we will often discover, against an optimistically Platonic presupposition, that the world does not deliver the kind of order required to underwrite perfectly univocal definitions.

So much, however, need not incline us to despair, or even to the prospects of loosely associated descriptions of the sort preferred by devotees of Wittgensteinean family-resemblance. For though, to use one of Aristotle's favourite locutions, many core philosophical concepts are 'meant in multiple ways' (*pollachôs legomena*), this is compatible with their being core-dependent homonyms. The doctrine of core-dependent homonymy treats central philosophical concepts as exhibiting structured order in multiplicity: all non-core instances are such that their analyses depend in asymmetric ways on the definition of a core, governing sense of the term. Importantly, when speaking of definition in this connection, Aristotle is not thinking of merely lexical definition, but rather of essence-specifying definition, the sort which captures, in accordance with his general approach to essence, not merely the modal features of the entities defined, but rather their deep explanatory features, those which capture *what the entity is*. Aristotle is surely right that there exists logical space for such definitions. Whether anything occupies that space cannot be judged in advance of inquiry but is really rather a question of the success or failure of the individual analyses of the putatively core-dependent homonyms proposed by Aristotle. As we will see, these include, in addition to *goodness*, such diverse concepts as *life*, *cause*, and *being*. Accordingly, as we proceed to a consideration of Aristotle's philosophical investigation and analysis, we shall have occasion to assess his most celebrated attempts to lay bare and explain the complex structure of the rational universe.

FURTHER READING (* = ESPECIALLY SUITED TO BEGINNERS, IN TERMS OF CLARITY OR ACCESSIBILITY)

Primary Sources

Aristotle, *Categories* i; *Prior Analytics* i 1, 4, 30, ii 23; *Posterior Analytics* i 1–10, 22, ii 8–10, 19; *Topics* i 1–5, 1–12, vi 4, ix 22, 34.

Secondary Sources

Barnes, J., *Posterior Analytics*, translated with a commentary, Second Edition (Clarendon Press: 1994)

*Bolton, R., 'Aristotle: Epistemology and Methodology', in C. Shields, ed., *The Blackwell Guide to Ancient Philosophy* (Blackwell: 2003), pp. 151–62

Irwin, T. H., *Aristotle's First Principles* (Clarendon Press: 1988), pp. 3–72, 117–50

McKirahan, Richard, *Principles and Proofs: Aristotle's Theory of Demonstrative Species* (Princeton University Press: 1992)

Shields, Christopher, *Order in Multiplicity: Homonymy in the Philosophy of Aristotle* (Oxford University Press: 1999)

Smith, Robin, *Aristotle: Prior Analytics* (Hackett: 1989)

*Smith, Robin, 'Aristotle's Logic', *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu/entries/aristotle-logic/)

*Taylor, C. C. W., 'Aristotle's Epistemology', in S. Everson, ed., *Companion to Ancient Thought 1: Epistemology* (Cambridge University Press: 1990), pp. 116–42

*Witt, C., *Substance and Essence in Aristotle* (Cornell University Press: 1989)

Four

Aristotle's Early Ontology:

Categories of Being, Truth, and Modality

4.1 THE GENERAL ORIENTATION OF ARISTOTLE'S *CATEGORIES*

Although a long-lived and profoundly influential work, Aristotle's *Categories* can prove a bit austere and bewildering when first encountered. In the first sentence of this treatise, Aristotle announces, without any orienting introduction, that some things are *homonymous*, and after briefly illustrating what is meant by this suggestion, he adds that other things are *synonymous* and still others *paronymous* (*Cat.* 1a1–11). A bit further along in the work, Aristotle claims, again abruptly and without any trace of justification, that there are ten categories of being (*Cat.* 1b25–2a3). One might wonder first why one should attend to the phenomena of homonymy and synonymy; and once that is grasped, one might more pressingly query what Aristotle's ten categories are supposed to be categories *of*. Biologists offer taxonomies of animals and plants; chemists offer tables of elements; and librarians, we may be thankful, offer catalogues of books arranged and sorted by topic, author, and title. Aristotle says only that his categories are the categories of 'things spoken of without combination' (*Cat.* 1b20); and beyond giving a few illustrations, he does not explain what he means by *combination*; nor does he indicate why one should care in the least about an inventory and categorization of things not spoken of in this way.

To appreciate what things spoken of without combination might be and why we, as philosophers, ought to care greatly about their categorization, it is useful first to reflect upon

Aristotle's apparent aims in the *Categories*. When first approaching this work in English, it is natural to think that it will concern itself primarily with language. After all, it opens with talk of synonymy and homonymy. We think of synonyms as distinct words which share the same sense, for example *masticating* and *chewing* or *grieve* and *mourn*; we think of homonyms as cases where two words sound the same, though differing in meaning and spelling, for example *their* and *there* or *bailed* and *baled*; and we think of words as paronymous, when we think of words under this description at all, when they are cognate, or derived from the same root, for example *location*, *localize*, and *local*.[1] Further, when we see the sorts of items on Aristotle's list of things spoken of without combination, namely *man* and *runs*, in contrast to those on his list of things spoken of with combination, such as *man wins* and *man runs* (*Cat.* 1a16–19), it is again natural to surmise directly that he is thinking about language and further that his categories are some variety of linguistic entity. We may readily observe that 'man' is a noun and 'runs' is a verb, whereas 'man runs' is a combination of a noun and a verb yielding a simple subject-predicate complex or declarative sentence. Thus, being 'spoken of without combination' might seem to indicate simple grammatical categories, and nothing grander than that.

So much would have at least the advantage of explicating what Aristotle takes his categories to be categories *of*. His dominant concern, according to this approach, would be the elements of language. Accordingly, to answer our query, we might think that just as biologists taxonomize species and genera of plants and animals, so linguists taxonomize linguistic kinds, first at the level of morphemes and phonemes but then also at the level of parts of speech – and that this is just about where Aristotle, judged on the basis of examples, seems to be trading. It appears, at least on this approach, that Aristotle's interest in the *Categories* is primarily linguistic.

It is important to appreciate from the outset that this appearance is utterly misleading: Aristotle is *not* concerned with the categorization of words or other linguistic types. Rather, the *Categories* deals quite generally with *the things there are* (*ta onta*). This is

clear both from Aristotle's explicit statements and from the language he uses when presenting his views. As his Greek makes clear, he is interested in homonymous *things* (*homônuma*) and synonymous *things* (*sunônuma*). In speaking of such things, he is not concerned primarily with words, but rather with the things words describe. Both expressions are for him technical terms and have nothing to do with their English cousins: for Aristotle, homonyms are entities with the same name but different definitions, while synonyms are entities with the same name and the same definition (*Cat.* 1a1–12). As we have seen,[2] homonyms form a complicated class, admitting of a number of sub-types, whereas two things are synonyms just in case their essence-specifying definitions are the same. A horse and a dolphin are synonymously *animals*, whereas the directors of a corporation and the planks for sale in the local lumberyard are homonymously *boards*. (Note, then, that homonymy and synonymy are *predicate-relative*: a statue of Trotsky and Trotsky himself are homonymously *men* but synonymously *magnitudes*.) Similarly, when Aristotle provides his list of categories, he very clearly means to taxonomize the kinds of beings there are, not words or other linguistic categories.

Aristotle's basic suggestion, then, is that it is possible to determine the most basic kinds or structures there are. Although he is sensitive to points of language use, his is a programme in metaphysics, not linguistics. He is willing to advert to features of language because – and only to the extent that – language naturally tracks divisions in the world and so may reasonably be assumed to provide clues or defeasible data about these divisions.[3] Nor, for that matter is it a programme in epistemology or psychology. That is, in attempting to characterize the most basic kinds, Aristotle does not proceed by first reflecting on those structures we might deem to be *knowable*, or more weakly still, on those features of our conceptual architecture that we have come to regard as basic. In proceeding this way, Aristotle presumes to offer a fully realist theory of categories, that is, one aiming to characterize the most basic kinds of the universe, which he takes to be fixed, structured, and intelligible. He does not think of himself – more modestly – as attempting merely to capture the deepest

lineaments of our own conceptual apparatus or psychological proclivities: he is not endeavouring to describe how we happen to think. Rather, he means to urge the thesis that there are basic, irreducibly distinct kinds of beings, and that if we are to think of the universe aright, we must come to terms with this fact. The programme of the *Categories* is thus a most ambitious enterprise.

To give an initial flavour of Aristotle's approach to category theory, one might ask, more or less randomly: What is cobalt blue? The answer: cobalt blue is a shade of blue. And what is blue? Answer: blue is a colour. And a colour is? Answer: a quality. But what is a quality? Although we might now characterize what it is to be a quality, as Aristotle sees things we can appeal to no further hierarchical kind to which we might subordinate the category of quality in an answer to our question. That is, we might say that a quality is a feature of things which exist, a property sharable by many different entities, or that it is an attribute possessed and manifested by certain kinds of objects. Further, we might argue about whether qualities can exist uninstantiated, about whether all qualities are on par with one another, whether qualities are universals or particulars, or whether something had by at most one being (e.g. the quality of being the one and only person now reading these words on this very page from just this angle of approach) is a genuine quality or not. Such questions are now, however, questions about the nature and character of qualities – they assume that there are such entities as qualities. So much already concedes at least part of Aristotle's categorial point, namely that there are qualities and that the category of quality is a fundamental category worthy of investigation and explication.

This much of an orientation is not intended to provide a defence of Aristotle's approach to category theory. Still less does it propose a general defence of the enterprise of category theory as such. Instead, it offers something of the general flavour of Aristotle's orientation. As it is presented in the *Categories*, his theory simply asserts that there are categories of being, lists them, and then proceeds to characterize each of them individually. Aristotle's presentation consequently invites questions of various kinds, both internal and external, about the derivation, justification, and

ultimate aims of his category theory. We shall limit ourselves to a very few of these questions, concerning especially the category of being Aristotle accepts as fundamental relative to the rest, substance (*ousia*).

As we shall see, it is fundamental to any understanding of Aristotle's theory of categories that it is intended to have a severe anti-Platonic purport. A consideration of how successful that intention may prove introduces Aristotle's modern readers into the core of his philosophy.

4.2 ARISTOTLE'S WORK: THE *CATEGORIES*

Before we motivate and assess Aristotle's theory of categories, it is salutary to recognize that some of our work is hampered by the unclear provenance of the work which has come down to us under the title of the *Categories*. Most scholars assume that this is an early work of Aristotle's, written while he was still a member of Plato's *Academy*.[4] Although it is impossible to be certain about such matters, this dating is overwhelmingly likely and will be assumed in what follows. Even allowing that, we are presented with formidable difficulties regarding the work's contents. It is instructive in this connection to note that the work enjoyed a number of different names in antiquity.[5] It was called the *Categories*, *On the Ten Categories*, *On the Ten Kinds*, *On the Ten Kinds of Being*, and, also, tellingly, *Preface to the Topics*. This last title represents a judgment about its relation to the rest of Aristotle's *Organon*, the set of works intended to provide the tools required for scientific and philosophical inquiry.[6] On this way of regarding its contents, the *Categories* treats basic *terms*, of the sort we have seen in Aristotle's syllogistic,[7] while the following treatise, *De Interpretatione*, treats statements, leaving the *Prior* and *Posterior Analytics* to consider the logical relations between statements.[8] Finally, within this set of works, the *Topics* and *Sophistical Refutations* treat other features of argumentation, dialectic, and argumentative strategy.[9] Thus, relative to the rest of the *Organon*, the *Categories* is involved in an inquiry into the basic metaphysical units or atoms which can combine into structures of various sorts.

Now, if we assume that it is an early work, and that it is mainly concerned with terms, we are confronted with another problem, internal to the treatise as it has come down to us: the *Categories* lacks any obvious plan or thematic unity. It divides into three main sections: (i) the *Pre-Categories* (traditionally called the *Antepraedicamenta* = *Cat.* 1–3); (ii) the *Theory of Categories* (the *Praedicamenta* = *Cat.* 4–9); and (iii) the *Post-Categories* (the *Postpraedicamenta* = *Cat.* 10–15). These divisions signify that the work has three main thrusts: the *Pre-Categories*, which seems to do the spade work for the theory of categories, though precisely how has been disputed; the *Theory of Categories*, which delivers the theory of categories and treats the individual delineated categories in detail; and finally, the *Post-Categories*, which purports to provide guidance for ways to think about the categories and the relations between them. It may be that the *Post-Categories* was added by a later editor.[10] Scholars differ about how these various sections are to be related, and indeed about whether they are all intended to be parts of a single treatise.[11]

However some of these issues may be resolved, it is clear that the main thrust of Aristotle's theory emerges in the first two sections, *Categories* 1–9. These sections will accordingly be the main focus of our discussion. We will look in turn at the *Pre-Categories* (the *Antepraedicamenta* = *Cat.* 1–3) and the *Theory of Categories* (the *Praedicamenta* = *Cat.* 4–9).

4.3 THE *PRE-CATEGORIES*: AN ANTI-PLATONIC CONVICTION

After opening the *Categories* by recounting the notions of homonymy, synonymy, and paronymy,[12] Aristotle seems to make very little use of this apparatus.[13] He moves instead directly to an account of 'things said without combination' (*Cat.* 1a16), where the intended referent seems to be a certain sort of metaphysical simple, which may be combined to form a truth maker.[14] That is, we may speak of Socrates, who is referred to by the name 'Socrates', and we may express the action of his running by the predicate 'runs', but neither 'Socrates' nor 'runs' is made true by

the bare existence of either Socrates or of someone's running. By contrast, 'Socrates runs' is truth-evaluable, and is made true by Socrates running. We are left to infer that the constituents of the complex truth maker, the fact of Socrates running, are the 'things spoken of without combination'. These components would be, then, *Socrates* and *runs*. The question then arises: what are *Socrates* and *runs*, the items which combine to make up the complex of Socrates running? Are they, for example, members of the same ontological category?

Why might someone be tempted to ask this question? Aristotle's reasons seem rooted in his concerns about Platonic Forms. To see why – and if we bear in mind the caution that Aristotle's *Categories* deals with things and not words – we may begin to understand Aristotle's investigation into things said without combination by considering a pair of sentences, and by evaluating how Plato and Aristotle might conceive them differently. The sentences are, in terms of their surface grammar, just alike:

- Socrates is pale.
- Socrates is human.

Among their similarities at the level of surface grammar, each sentence is a single monadic predication. Each has the same syntactic form, and each is readily analysed into the same logical structure, namely *Fa*, where '*a*' is an individual constant naming Socrates and '*F*' expresses an attribute ascribed to him. So, it would be natural to infer that these sentences should be analysed in much the same way. Put into a non-linguistic idiom, though taking a clue from the surface structure of the grammar, one may say that each sentence ascribes a simple property, *F-ness*, to an individual, Socrates.

On one way of understanding Plato's theory of Forms, the deep structure of these sentences is mirrored perfectly in their surface structure. Suppose that each of these sentences is true. We may ask: what makes them true? What, that is, is the truth-maker for each? On the Platonic approach the answer comes up the same for

both sentences: in each case we have an individual, a Form, and a participation relation. Thus:

- Socrates – the participation relation – Paleness
- Socrates – the participation relation – Humanity

Now, there are interesting questions about what the participation relation is supposed to be;[15] about what Forms are supposed to be;[16] and more generally whether this portrayal of Plato is fair and accurate. Let us suppose, for simplicity's sake, that this representation is fair to Plato, and further that the participation relation is in one way or another akin to a predication relation, and finally that Forms are abstract universals. Then the picture is this: the truth-maker for 'Socrates is pale' is the complex of Socrates participating in the Form Paleness – that is, the Socrates having the universal Paleness predicated of him, while the truth-maker for 'Socrates is human' is, analogously, the complex of Socrates participating in the Form Humanity, that is, Socrates having the universal Humanity predicated of him.

Crucially, on this Platonic approach, the participation relation is the same in each case. Further, as stated, there is no differentiation between the kinds of universal Forms there may be. Now, however, we can begin to see why Aristotle opens the *Categories* with the apparatus of homonymy and synonymy. His first complaint against Plato comes in two waves. First, Aristotle objects that he treats the participation relation in which particulars stand to universals as univocal. Second, Aristotle implies that even if there were Platonic Forms, they could not all be on par with one another.

Aristotle wishes his readers to appreciate that the predicational world is much more complex than this alluringly simple portrayal of Plato would have it. To begin, according to Aristotle's way of thinking of these matters, the surface similarity between our two sentences masks a profound and fundamental ontological distinction. Consequently, if we rely upon surface grammar as our guide, we will be led astray, into Platonic territory, when we come to approach ontologically serious questions. The first difference between our sentences is one we have already met: the second sentence, but

not the first, ascribes an essential feature to Socrates.[17] Minimally, when he ceases to be human, Socrates ceases to exist. His ceasing to be pale, however, is as easy as his spending a day at the beach. This real difference, suggests Aristotle, should be reflected in how we understand these sentences, or, more exactly, in how we characterize the relations in the world which make them true.

> Among the things that exist, some are *said-of* a subject but not *in* any subject. For example, man is said-of a subject, the individual man, but is not in any subject. Some are *in* a subject but are not *said-of* any subject. (By 'in a subject' I mean what is in something, which, not belonging to it as a part does, cannot exist separately from what it is in.) For example, an individual bit of grammatical knowledge is in a subject, the soul, but is not said-of any subject; and the individual white is in a subject, the body – for all colour is in a body – but is not said-of any subject. Some are both *said-of* and *in*. For example, knowledge is in a subject, the soul, and is also said-of a subject, namely a bit of grammatical knowledge. Some are neither *in* nor *said-of* a subject, for example, the individual man or individual horse; nothing of this sort is either in a subject nor said of a subject.
>
> (*Cat.* 1a20–21b6)

Fundamental to understanding Aristotle's general approach to instantiation or exemplification is appreciating the two types of predications captured by being *said-of* (*legetai*) and *in* (*en*).

Although the precise language of essence and accident is absent from this passage, the examples used by Aristotle strongly suggest that he is tracking just this distinction. If that is so, *F* is said to be *said-of x* just when *F* is predicated essentially of *x*. By contrast, *F* is said to be *in x*, just when *F* is accidentally predicated of *x*. Aristotle notices that with just these two types of predications, we can see already that there must be four general kinds of things (see Table 4.1).

Reflections on these relations, Aristotle contends, will provide information about the kinds of things there are as well as the relations which obtain between them, information which is crucially ignored and obscured by Plato's univocal approach to participation.

The first and most obvious consequence of Aristotle's schema is

Table 4.1 Types of predications into types of beings

Said-of?	*In?*	*Type of being*	*Example*
Yes	Yes	Non-substance universal	White
Yes	No	Secondary substances	Human
No	Yes	Non-substance particulars	This knowledge of grammar
No	No	Primary substances	This horse; this human

simply *that there are irreducibly different kinds of things*. Whiteness is not the same as humanity. Put in a rather cumbersome way, whiteness belongs to a kind of thing which can be *said-of* or *in* other things, while humanity belongs to the kind of thing which is only *said-of* and never *in* anything. That is, anything which is a human is essentially a human, whereas being white might be essentially or accidentally predicated. Socrates might be white and then tan, so that whiteness is accidentally predicated of him, whereas a given shade of white is essentially white. So, relative to different kinds of subjects, whiteness might be predicated either way. Taken together, these differences suggest that whiteness and humanity are different kinds of properties, that they interact with subjects in different ways, and that consequently any attempt to treat our initial two sentences as admitting of the same deep analysis results in radical oversimplification. Surface grammar masks metaphysical difference.

Further, some things are only *in* others and never predicated of anything essentially. This sort of item may be a little hard to fathom at first, but Aristotle's meaning is fairly clear. In addition to whiteness and Socrates, we might focus on the individual whiteness manifested by Socrates at a given time. An example might help explicate his point. Both Jack and Jill have studied French. Both have a reasonably good grasp of French grammar, but Jill is a bit more secure and confident in her knowledge than Jack is. Still, each has knowledge. We might speak of *Jill's knowledge of French grammar* and compare it, as we just have, with *Jack's knowledge of French grammar*, by saying *that Jill's knowledge of French grammar is superior to Jack's*. In this sense, *Jill's knowledge of French grammar* is a particular sort of thing, something which Jill carries around with her, in the way that her pale complexion goes where she goes. It

is *in* her, says Aristotle, not as a part of her, but as something that cannot be separated from her (*Cat.* 1a24–25). This suggests that Jill's knowledge is *in* her, as accidentally predicated of her, and depends upon her for its identity conditions. Such knowledge is not essentially predicated of Jill, since she may easily lose her knowledge of French grammar through lack of practice; and it is certainly not predicated of Jack or anyone else in any way at all. So, an individual knowledge of French is not shareable, and hence is not a universal, yet it is not a completely autonomous sort of thing, since dependent on its bearer for its existence. An individual knowledge of grammar is a *non-substance particular*.

Its being a non-substance particular results directly from the fact that Jill's knowledge of grammar cannot exist without Jill and so is not independent of Jill. This fact in turn provides a key insight into Aristotle's attitude towards a category of being which he regards, throughout his career, as of supreme importance. Thinking in terms given by the four permutations of the *said-of* and *in* relations, it becomes clear that some things are neither *said-of* nor *in*, and they populate Aristotle's category of *primary substance* (*prôtê ousia*). In fact, he will argue that the primacy of primary substance consists in the fact that 'if it did not exist, nothing else could exist' (*Cat.* 2b5–6). If this is correct,[18] then primary substance has a fundamental role to play in ontology: primary substances will be the basic entities upon which other things depend for their existence. This will have the immediate consequence, if correct, that Platonic Forms do not exist at all; for, as Plato portrays them, Forms are abstract mind- and language-independent entities which do not depend upon anything at all for their existence. If there are such entities, then there are no Forms. In these ways, then, Aristotle seeks in the first three chapters of the *Categories* to topple a central tenet of Plato's philosophy, and indeed to invert one core commitment of his metaphysics: primary substances are not abstract universal Forms, but rather flesh-and-blood individuals, like Socrates or his dog.

Taking all this together, we find even in Aristotle's earliest work a profoundly anti-Platonic orientation. Where Plato sees univocity, synonymy, and similarity, Aristotle sees multiplicity,

homonymy, and variation. In the opening chapters of the *Categories*, he tries to show how we are led astray by our untoward tendencies to seek uniformity in a categorically complex world. If we reflect upon the various predication relations involved in even some elementary sorts of cases, then we discover the dissimilar sorts of predicates revealed by the *said-of–in* distinction. In so doing, we uncover forms of ontological priority that a less nuanced, category-free approach positively obscures.

4.4 THE *THEORY OF CATEGORIES*: KINDS OF BEINGS

Given the purport of the *Pre-Categories* (*Cat.* 1–3), it is unsurprising that Aristotle gives pride of place to substance when he offers his *Theory of Categories* (Cat. 4–9): 'Of things said without combination, each signifies either: (i) a substance (*ousia*); (ii) a quantity; (iii) a quality; (iv) a relative; (v) a where; (vi) a when; (vii) being in a position; (viii) a having; (ix) an acting upon; or (x) a being affected' (*Cat.* 1b25–27).[19]

There follows a series of illustrations, which, contends Aristotle, should give at least a rough indication of the sorts of things he has in mind (*Cat.* 1b27–2a10). Here, then, are the ten delineated categories together with their illustrations:

Category	Example
Substance	man, horse
Quantity	two-feet long
Quality	white, grammatical
Relative	double, half
Place	in the Lyceum, in the market
Time	yesterday, a year ago
Position	lying, sitting
Having	has shoes on, has armour on
Acting upon	cutting, burning
Being affected	being cut, being burnt

Aristotle refers frequently to his categories, though only in one other place does he provide the entire list, and even then he nominally

alters the title of the first category. In the *Topics* (103b21) he repeats the whole list, though in place of *substance* (*ousia*), he refers to his first category as *what it is* (*ti esti*). This variation already hints at one central way in which Aristotle thinks about substance. A substance is what exists in a basic, non-derived, and independent way: it is what something is. That is, a substance, in terms already introduced, is something which exists in its own right.[20] To motivate this thought at first informally: if we come upon Socrates, pale and seated in the marketplace, we might ask: what is it? Some true answers might include: 'Something pale', 'Something seated', 'Something in the marketplace', 'A human being', and 'Socrates'. Although each of these replies is correct as far as it goes, only the last two seem to answer the question, 'What is it?' in such a way as to tell us what the thing in question is in some permanent and deeply explanatory way.

So much provides only a first approach to Aristotle's claim that substance has pride of place on this list of categories. More fully, Aristotle's contention about the primacy of substance will prove to be a claim about intracategorial relations, to the effect that all categories depend upon substance for their existence (*Cat.* 2b5–6[c]). This, though, gives rise to an immediate question: if all of the categories must exist, why and how is one more fundamental than the others? There is also, however, a question prior to this, not about the relations between the categories as we have them, but about the particular list of categories proffered: why just these ten categories? Where did they come from? What justifies this list and not some other? Why are they ten, and not, say, four or seven or thirteen? Indeed, to anyone first approaching it, and perhaps even to those who have studied it for a while, this list is bound to appear as a bit of a motley. Aristotle does not say where these categories originate; he does not specify what justifies the inclusion of these particular ten category heads; and still less does he pause to justify the enterprise of category theory as such. Instead, we are given a deliverance, one which may seem unmoored to anything beyond a kind of codified common sense. Perhaps this is what prompted Kant to speak of Aristotle's categories in terms at once both flattering and disparaging:

> Aristotle's search for these fundamental concepts was an effort worthy of an acute man. But since he had no principle [of generation for them], he rounded them up as he stumbled upon them, and first got up a list of ten of them, which he called **categories** (predicaments). Subsequently he believed that he had found five more of them, which he added under the name of post-predicaments. But his table still had holes.[21]

Kant's complaint concerns the generation of Aristotle's categories. After addressing this complaint, we will return to our intracategorial question concerning the primacy of substance.

4.5 GENERATING THE CATEGORIES

Kant's remark is fair if Aristotle has no grounding for his categories. In truth, Aristotle does not offer any overt grounding or justification, for either his preferred set of categories or the enterprise of category theory as such. Moreover, given his tendency to mention only the first few of the categories on his complete list, the suspicion lies near that some of Aristotle's categories are nonfundamental and so might be reduced to others on his list or eliminated altogether.

Questions about the extent and underpinnings of Aristotle's categorial scheme are in different ways questions about their ultimate source and justification. Of course, Aristotle may be implicitly relying on some generating principles without recounting them; or, more weakly, he might have available to him some such principles without ever reflecting on them or their ultimate defensibility. In fact, when faced with Aristotle's list of categories, one might readily imagine two general ways of proceeding: one may treat the categories as *underived* or as *derived*. An approach is underived if the categories are not inferred from more basic principles that we have prior reason to accept. Instead, on this approach, they merely taxonomize the world at its most general level in a common-sense sort of way.[22] The first approach is relatively unsystematic and so to some extent liable to the Kantian criticism. The second approach to generating the categories is more

ambitious in seeking to derive them from prior principles. It is thus more systematic than the underived approach. One might proceed along these lines by arguing that the categories are entailed by some metaphysical principles we have antecedent reason to accept; or one might, more weakly, accept as given the existence of some one category, presumably substance, and thence endeavour to show what other categories *must* exist if there are to be substances. Although both the derived and underived approaches have found their champions, in the context of understanding Aristotle's *Categories* each is somewhat conjectural: in fact, no derivation is given by Aristotle.

We will consider two versions of each approach. In some ways, we will find the strategies within each approach overlapping to some degree. They are, however, sufficiently distinct as to be discernible.

Underived Approaches: The first underived approach to understanding the categories simply acknowledges and accepts the Kantian criticism by suggesting that the categories are neither more nor less than codified common sense. We look around the world and we see that Socrates is not the same sort of thing as whiteness. Socrates is an individual, a bearer of properties, but is certainly not something shareable. Whiteness, by contrast, is shareable, because it is a quality, something readily exemplified by different, unrelated subjects, say an arctic fox and a Mercedes Benz. On this basis, one might infer straightaway that whiteness belongs to a different category of being than does Socrates. Socrates is a primary substance, a basic being, and whiteness is a quality. Then again Socrates weighs 67.5 kilos. His weight describes a quantity of matter, where a quantity is unlike Socrates, because in itself it is indeterminate, but also unlike a quality, because it is not shareable. So, there are, in addition to substances and qualities, quantities.

Further, there are things like masters and slaves. The existence of a slave entails the existence of something else, namely a master, and so is unlike Socrates, whose existence, taken by itself, does not entail the existence of anyone else. So, a relative thing is not a substance. Unlike a quantity, a slave is determinate and, unlike a

quality, is something which cannot be shared, not at any rate in the way that whiteness can be shared by showing up in different subjects in different places at the same time. One might carry on piecemeal in this way, attempting to show how each of the ten categories has features the others lack and so cannot be reduced to any of the others. Plainly, though, this approach will prove unwieldy and will in addition be open to all manner of reductive challenges. Although it is an interesting exercise to see whether it can be made to work, even the finished product, if it can be produced, will be liable to the Kantian complaint and will be tainted by being transparently ad hoc. Moreover, it seems hard to appreciate how, by this method, we will arrive at ten and only ten categories.

A second version of the first general approach, that is the underived approach, begins in an observation about Aristotle's language. It is salient that the words given at the heads of a good number of Aristotle's categories are simply nominalized versions of questions one might ask about any random entity. Thus, although the first category is called 'substance' (*ousia*) in the *Categories*, in a parallel list from the *Topics*, as we have observed, Aristotle's first category is called 'what it is' (*ti esti*; 103b21). This is, clearly, simply the question 'What is it?' made adjectival. Similarly, in both the *Categories* and the *Topics*, the next two category headings, conventionally translated as 'quality' and 'quantity' are more literally rendered as 'of some quality' (*poion*) and 'of some quantity' (*poson*). In each case, the driving questions are plain enough: 'Of what sort is it'? and 'How much is it?'[23]

Taking Aristotle's language as a clue to his procedure, we might then imagine his selecting an arbitrary object and asking:

- 'What is it?'
- 'How is it?'
- 'How much is it?'
- 'To what is it related?'
- 'Where is it?'
- 'When is it?'
- 'In what position is it?'

- 'What does it have?'
- 'What is it doing?'
- 'How is it being affected?'

These ten questions would then find their various responses:

- 'He is a human.'
- 'He is pale.'
- 'He is 67.5 kilos.'
- 'He is the husband of Xanthippe.'
- 'He is in the marketplace.'
- 'He is there this afternoon.'
- 'He is seated.'
- 'He has sandals on.'
- 'He is questioning.'
- 'He is being scorned.'

These sorts of questions may seem, then, to generate Aristotle's category headings, for the answers to such questions cohere closely to the kinds of category illustrations Aristotle produces. It is noteworthy, for example, that when asked to what Socrates is related, the answer will involve a non-essential feature of Socrates. This is because Socrates is a substance and, says Aristotle, no substance is a relative (*Cat.* 8a15–17). Further, importantly, no one answer is even *in principle* an answer to any one of the questions other than its own. Thus, for example, the answer, 'He weighs 67.5 kilos' is not only the wrong answer to the question, 'Where is Socrates?', it is *the wrong kind of answer*. This is unlike the answer, 'He is in Pireus.' Such an answer might be false, but it at least might have been true and is at least the right kind of answer to the question, 'Where is Socrates?' By contrast, 'He weighs 67.5 kilos' could not be an answer to the question, 'Where is Socrates?' These are not only wrong answers, but are *necessarily* wrong. They are wrong because they involve confusions of a deeply perverse sort. If a child answers the question 'What is four times four?' by saying 'Eight', then she has made an arithmetic mistake, and can be corrected. By contrast, if when asked this question, she responds,

'It is the same as whispering.', then she has made another sort of mistake altogether. She has made a category mistake. There are category mistakes, however, only if there are categories to mistake.

On this approach, in sum, merely by subjecting a randomly selected object to a series of interrogatives, we arrive, if somewhat haphazardly, at something like Aristotle's list of category heads. Still, if the process seems haphazard, something of significance emerges from this approach: it is not just that an answer to one sort of question would not be a suitable answer to another sort, but that one sort of answer *could not* serve as an answer to another. This suggests that the questions generated, haphazardly or not, are in fact tracking genuine modal differences in the world. They are capturing necessary, categorial distinctions, not merely arbitrary conceptualizations.

Even so, the way of the interrogative remains liable to some version of the Kantian criticism, since one will immediately want to know which questions are pertinent and permissible. Are they only those we can think of at the moment? That seems arbitrary. Are some questions, perhaps in view of their unnaturalness, ruled out of court? Thus, I might find myself wishing to ask, regarding Socrates, some of the following: 'Is he more than fifty miles from home?', 'Has he ever seen a Ming Vase?', 'What did he dream of last night?', 'How is his thyroid?', and 'Is he really as ugly as they say he is?' Some of these seem not to be categorial questions. If that is right, however, then only certain styles of questions are suitably categorial; and so only certain sorts of questions may be asked when we are seeking to generate a list of categories. Which, then, are the categorial questions? What principle does Aristotle implicitly rely upon in selecting just his ten questions? Unfortunately, these sorts of questions return us to our initial position. We find ourselves inclined to think that there may be some categories of being, but which are they? How do we identify them?

One might attempt an answer to these sorts of questions by a slightly more organized, but still relatively unsystematic approach to generating the categories, one also rooted in an interrogative approach, but of a different kind than the one so far pursued. One

might look at Socrates and ask, 'What is it?' Any number of answers might be forthcoming: 'It is a human being', 'It is white', 'It is 67.5 kilos', 'It is in the supermarket', 'It is now', and so forth. Now, one might ask *the very same questions*, 'What is it?', of any of these answers. Consider the answer, 'It is white.' One may in turn ask: 'What is white?' The answer: white is a colour. The same question again: 'What is a colour?' Eventually, by repeated application of this procedure, we end up, according to Aristotle, with answers which have no higher genus. That is, eventually we say something like, 'It is a substance', or 'It is a quality.'

When we press on, and ask what a substance or a quality is, we no longer have any higher genus to which we might subordinate it. The best we can say in this direction of substances and qualities, evidently, is: 'They are things which exist.' This, though, is just what Aristotle had introduced the categories as categories of: 'Among the things which are . . . ' (*Cat.* 1a20). Yet he contends outside of the *Categories* that there is no genus of being (*APo* 92b14; *Top.* 121a16–19, b7–9). That is, being is not itself a kind, divisible into sub-genera; rather to say that substances and qualities and so forth exist is simply to record the fact of the existence of all of the highest genera, the category heads themselves, but does nothing to explain or categorize them.

Perhaps one indication of Aristotle's motivation for thinking that being is not itself a genus is the following. Whenever we say that some *x* is, we are constrained to say that *x* is some *F* or other, for example that *x* is some quantity, or quality, or substance. To be is to be some *F*; nothing simply *is*. So, one might infer, being is not itself a way of being; it is not a genus, or kind, of being. This helps explain why, when we reach the category heads, we are not prohibited from analysing them – this is precisely what Aristotle attempts to do in the *Theory of Categories* (the *Praedicamenta*; *Cat.* 4–9) – but what we cannot do is to analyse them in terms of the method of genus and differentiation. That is, we cannot say that a substance is this or that kind of being, something to be differentiated from other beings by appeal to this or that feature, in the way that we might say that a human being is to be differentiated from other animals by being rational. For to say that *x* is an animal is

already to specify something essential to it, whereas to say that *x* is a being is not to say anything essential, or even complete, of *x*. Instead, we attempt an intrinsic specification of the essence of substance in terms of its categorial features, an enterprise which, in view of its abstractness, is understandably complex and tangled.

Consequently, going so far already implicates us in some fairly abstract and tendentious metaphysical theorizing. To that extent, it would be wrong to treat even this second, less systematic way of generating Aristotle's categories as merely reflecting a common-sense orientation or some sort of folk metaphysics. For this route to the categories is already a regimented process, even if it is nonetheless rooted in common conceptions of the world. To this extent, if there is a complaint against the second of our underived approaches to Aristotle's categories, it is not that his system fails to be undergirded by secure metaphysical principles, but rather that it assumes a goodly number of such principles without expressly articulating or defending them.

Derived Approaches: Indeed, some of Aristotle's followers have sought to unearth the principles of generation and in this way to address the sort of worry reflected in Kant's criticism directly. Two such proposals proceed rather differently: the first seeks to explain the connection between the *Pre-Categories* (*Antepraedicamenta*; *Cat*. 1–3) and the *Theory of Categories* (*Praedicamenta*; *Cat*. 4–9) and thereby to generate Aristotle's categorial scheme; the second, rather startlingly, tries to generate Aristotle's categories by appeal to a system which many contemporary theorists understand as positively incompatible with it. We will consider each of these briefly in turn.

The first derived approach has the twin advantages, if it is successful, of simultaneously co-ordinating two parts of the *Categories* which appear otherwise disjointed and of grounding the theory of categories. The basic thought is simple: primary substances, although basic, nevertheless require the other categories. Consider Socrates. If he exists, as he does, then there *must* be various things true of him. Although he need not be pale, Socrates must be some colour or other; although his weight may fluctuate by a few pounds as he eats and exercises, Socrates must have some weight or other; although he loves Athens, he need not

remain there – though he must be somewhere or other. These facts about Socrates, readily ascertainable upon a moment's reflection, are not contingent facts. They are modal facts, that is, facts about what Socrates *must* be if he is to be at all. Plausibly, one may run through the list of ten categories and see that each states something necessary for Socrates' existence. Hence, we have the basis for a unified and simple way of generating the categories:

- A category is a kind of thing a primary substance *must* be if that primary substance is to exist at all.

The phrase 'kind of thing' in this question denotes nothing especially technical, but merely signifies that upon reflection we can see that Socrates' existence comes with a certain amount of modal baggage. Socrates, like every other material particular, is implicated in a delineated modal space merely by existing. A theory of categories attempts to capture and characterize this delineated modal space.

Now, in addition to being relatively unified in its manner of generating the categories, this approach has the added advantage of beginning to address a conundrum about the text of the *Categories* that we have already introduced.[24] The *Pre-categories* develop a general division into *four* types generated by the permutation of the *said-of/in* distinction: (i) primary substance; (ii) secondary substances; (iii) non-substance universals; and (iv) non-substance particulars.[25] The *Theory of Categories* delivers and discusses *ten* categories of being. Unsurprisingly, and for good reason, the relationship between the *Pre-categories* and the *Theory of Categories* has long puzzled scholars. What is the connection, if any, between them? Aristotle does not say.

If, however, we are thinking of the ten categories as generated by identifying what kinds of things Socrates *must* be if he is to exist at all, then it will become clear that although all these kinds are necessary, in the sense that Socrates must be related to them all if he is to exist, nothing outside the category of substance is *essential* to Socrates.[26] Still, it would be wrong to think that Socrates could do without all the items mentioned in the non-substance

categories. After all, as we have seen, although he need not be pale, he must be some colour or other, and similarly for the other remaining non-substantial categories. Looked at from this perspective, nine of the ten fine-grained categories of the *Theory of Categories* (*Cat.* 4–9) specify the non-substantial categories stated in a more coarse-grained way in the language of the *Pre-categories* (*Cat.* 1–3). Thus, *weighing 67.5 kilos* is *in* Socrates, though he need not weigh just this amount. Still, he *must* be some quantity or other.

In this sense, the ten categories do not compete with the four types generated by the *said-of/in* distinction of the *Pre-categories*; nor even do they serve as a corrective to them. Rather, on this approach, the ten categories delineated in the *Theory of Categories* (*Cat.* 4–9) develop the basic insight of the four-fold distinction of the *Pre-categories* (*Cat.* 1–3), namely that we can appreciate that the surface grammar of like sentences can mask their ontological depth and disparity. Thus, one might say:

- Socrates is in the marketplace.
- Socrates is in pain.
- Socrates is in trouble.
- Socrates is in need of greater dietary discipline.

Plainly, each of these sentences says something accidental of Socrates, though the kinds of accidents are obscured rather than displayed by the surface grammar of the sentences expressing them. The non-substantial categories capture and display these irreducible accidental differences by making clear the kinds of things to which Socrates must be related if he is to exist at all. That, though, coheres exactly with the current, relatively systematic way of generating the categories.

Of course, if this approach is to succeed, much more will need to be said on its behalf. One can see, however, that this method provides at least a schema for generating the categories in a systematic way while simultaneously connecting the discussions of the first two main parts of the *Categories*.

There is, finally, another, still more systematic approach to generating the categories. It must be said at the outset, however,

that it is both a more radical proposal than anything encountered thus far and that it has fallen out of favour with most modern interpreters of Aristotle. Scholars have found the approach problematic because it conflicts sharply with a widely,[27] though by no means universally, received judgment regarding the date of the *Categories*.[28] Most of Aristotle's contemporary readers accept the *Categories* as an early work,[29] written before the hylomorphic theory of form and matter – and, indeed, we have explicitly assumed as much thus far ourselves in our thinking about the *Categories*.[30] In fact, to many the theory of substance in the *Categories* seems positively incompatible with hylomorphism.[31] In any event, it should escape the notice of no reader of the *Categories* that form and matter do not receive a mention.

Still, prior to the advent of modern stylometric dating techniques,[32] and despite the undeniable absence of any mention of form and matter in the *Categories*, an older tradition sought not merely to reconcile the theory of the *Categories* with hylomorphism, but to show how the theory of categories could in fact be *derived* from hylomorphism. The attempt, however improbable-sounding, merits consideration not least because any successful development in this direction would provide the most complete and forceful response to the Kantian challenge so far attempted. If the categories can be derived from hylomorphism, and hylomorphism is justified as necessary to explain change,[33] or indeed the bare possibility of change, then the theory of categories will be firmly anchored not, as Kant later sought to anchor his own theory,[34] by some appeal to the workings of human psychology, but by the undeniable existence of change in the actual world.

To develop just a flavour of such an approach, we may consider the categories of quality and quantity. Aristotle characterizes quality as 'that in virtue of which things are said to be qualified somehow' (*Cat.* 8b25–26), where the root idea is that qualities are the attributes of things. Similarly, he says that a quantity is the sort of thing which admits of being equal or unequal to another quantity, whether the quantities in question are quantities of times or numbers or bodies (*Cat.* 6a26–30). Here the basic thrust is that a quantity is an amount of some stuff or other, but is not,

taken by itself, anything determinate at all. Now, it will not take much imagination to see that qualities are form-like: in their first introduction, forms were indeed nothing other than positive qualities gained or lost in the process of change.[35] Hence, if we have change, we have forms; but forms are qualities; hence, if we have change, we have qualities. If we then come to appreciate by reflections internal to the theory of categories itself that qualities are not reducible to any other category, we will be in a position to see how hylomorphism generates the category of quality. It shows that there must be qualities, namely ways in which substances may be qualified. This is, however, just the sort of notion of quality articulated by the theory of categories.

The same development accompanies the route from matter to quantity. Hylomorphism has it that change requires not just form, but a complex of form and matter. At its inception, matter was just the underlying persistent, that which remained through change, whether qualitative or substantial.[36] Matter, however, again in its root conception, is just so much stuff, uncharacterized in itself, rather like extended mass, potentially a variety of things but none of them before it is enformed. Plainly, according to proponents of this approach, quantity is matter-like – especially if we are focusing on the quantities of bodies. Hence, if we have change, we have matter; but a quantity is at root nothing other than so much matter; hence, if we have change, we have quantity. Once again it falls to the theory of categories itself to investigate the defining features and kinds of quantity. It is notable that Aristotle treats quantity as in its nature commensurable with other quantities of the same kind: and indeed, of necessity, one quantity of matter weighs more, less, or the same as every other quantity of matter. In this sense, one may safely vouchsafe the existence of quantity as a category of being by an appeal hylomorphism, which has antecedently shown the indispensability of the notion of matter.

Taking these speculations altogether, then, hylomorphism grounds the theory of categories insofar as the individual categories may be derived from its basic terms: form generates quality and matter generates quantity. Of course, any defensible

grounding of this sort would need to move beyond quality and quantity, to the other remaining categories. No genuinely systematic attempt has been made since the Middle Ages, perhaps because Aristotle's modern readers are less inclined towards unitarian readings of his corpus than those steeped in the medieval hermeneutical practice of harmonizing seemingly discordant passages of his writings, as if they were busy at work showing how each biblical passage coheres with every other. Still, such a grounding should not be doomed before a serious effort is made to effect it. Presumably, if successful, a derivation of the categories from hylomorphism would then explain the omission of form and matter from the *Categories* by appeal to the thought that the work is intended to present the results of some long investigation, rather than the investigation itself, as when an executive summary of the findings of governmental commission states its main results without recounting the methods or justifications used to arrive at them.

A derivation of Aristotle's theory of categories of some sort or other would, of course, be welcome, especially if we find ourselves in agreement with the tenor of Kant's challenge to Aristotle. We have seen four attempts to effect such a derivation, two relatively unsystematic and two more ambitiously systematic. The first two derive Aristotle's categories in different ways from the distinctive language employed in his presentation of them: he uses nominalizations corresponding to interrogatives, thus giving the impression that we can generate a list of categories by exhausting the kinds of questions we might ask about any arbitrarily selected object, or by the repeated posing of a single question, namely 'What is it?', until such time as we find it impossible to climb any higher up the taxonomical tree we ascend at each new iteration of this question. These approaches have their advantages, but neither seems completely satisfactory. Minimally, in any event, we will be compelled to reflect upon the kinds of questions permissible, or on the constraints one might impose a priori on someone who insists on posing questions we might wish to deem unnatural or ungermane to the matter at hand. Further, neither of these approaches does much to explain any

connection there may be between the first two of the three main sections of the *Categories*, the *Pre-Categories* (*Cat.* 1–3) and the *Theory of Categories* (*Cat.* 4–9).

The third approach canvassed redresses this omission. It has precisely the advantage of attempting to ground the categories by explaining the connection between these various sections of the *Categories*. It is promising, though it must be acknowledged that Aristotle does nothing to indicate that this captures his line of thought. The same is true of the fourth and final attempt, which is at once the most inchoate and also the most ambitious. It seeks to derive the theory of categories in a fully systematic way from an otherwise well-motivated metaphysical theory, hylomorphism. Perhaps such a grounding would be most satisfying of all, at least to those who expect the categories to categorize not words, or patterns of thought, or lineaments of conceptual structures or of human psychologies, but, rather, as Aristotle himself suggests, the kinds of things there are (*Cat.* 1b25–26). Again, however, it must be said that if this captures the direction of his thought, Aristotle leaves it to his readers to supply the details. In general, in any case, it does seem to fall to Aristotle's readers to reflect upon the most defensible mooring of his categories: he himself offers none.

That said, the enterprise of justifying category theory, or more narrowly of justifying the particular list of categories favoured by Aristotle, while fascinating, is in a certain way external to the actual practice of the *Categories* as it has come down to us. To some extent, Aristotle's silence on these matters may reflect nothing other than his immediate preoccupation within that work as he conceives it. Perhaps he does not attempt to justify his categories, or the enterprise of category theory generally, because his goal is the more limited one of explicating the individual categories and the relations obtaining between them. So, one may conclude, he takes up internal and intracategorial questions because he already presupposes that there are answers to external challenges to category theory. This is fair enough. Although his enterprise would be otiose if there were no such answers forthcoming, it does not follow that he must himself provide the answers in his own work

on this topic. While a plant biologist hard at work in the field taxonomizing the varieties of monocot angiosperms might at some time or other wish to reflect on the nature of the categorial principles she employs in her work, for the actual conduct of her taxonomizing she need only observe that monocots are distinguished from dicots by their having one rather than two seed-leaves. Similarly, Aristotle can characterize the nature of substance, quantity, and quality without in the same work trying to prove that there are such distinct categories as substances, quantities, and qualities. Indeed, his actual practice in the *Categories* is much more of this sort: he takes on the challenge of offering lucid and defensible accounts of the categories he accepts. We turn now to one such treatment, of what is clearly his most fundamental category, substance (*ousia*).

4.6 THE FUNDAMENTALITY OF SUBSTANCE

Relying on the test laid down in the *Pre-Categories* (the *Antepraedicamenta*; *Cat.* 1–3), we move swiftly to the conclusion that there is just one sort of being which is neither *said-of* nor *in*, namely, primary substance (*prôtê ousia*). Evidently, its primacy consists in just this: a primary substance, like Socrates or a dog, is a subject of properties but is not itself predicated of anything else (*Cat.* 2a11–14; cf. *Meta.* 1028b36–37, 1038b15–16, 1042a26). Here again it is worth pausing to reflect upon Aristotle's manner of expressing himself. We have already seen the word '*ousia*' earlier when it was claimed that it was one of Aristotle's several words for 'essence'.[37] We have also seen that the word *ousia* is a technical term for Aristotle. Grammatically speaking it is an abstract noun, formed from the feminine participle (*ousa*) for the verb *to be* (*einai*). Its root meaning is, simply, 'being'. In connection with essences, Aristotle tends to use the word in a dependent sort of way, in speaking of the essence *of* something or other, say the essence of humanity.

He also, however, uses the word *ousia* in a free-standing way, as a count noun. That is, in addition to speaking of the essences of things, Aristotle will say, for example, that this horse *is* an *ousia*,

where the horse is not an essence, but the sort of thing which *has* an essence. In this sense, it makes ready sense to ask, 'How many are there?' For example, one may want to know, 'How many horses are there in the corral?' In this second, count-nounish sense, scholars translate '*ousia*' as 'substance'. This is in some ways unfortunate, since the notion of substance is equated in many non-technical contexts in English with *stuff* or *material* or *quantity* (e.g. 'Unfortunately, mercury is a substance that can be quickly absorbed by most organisms'). For these are precisely the sorts of candidates Aristotle will insist do *not* qualify as substance in his technical sense of the term. That acknowledged, it would be fruitless to attempt to legislate at this juncture that 'substance' is an unacceptable translation. The practice is at this point simply too widespread and too entrenched. Even so, it merits bearing in mind the connection of the word we render as 'substance' to its root, which is 'being' – as in '*a being*' in the sentence 'Surely if God is not a being, then there is little point in praying to him for assistance!' Note that in this sort of use, we might speak of the existence of one being or many, as in 'Only uneducated Greeks believed that their gods were actual beings.' As a first approximation, it is this sense of *being* that is intended by *substance*, when it renders Aristotle's *ousia*. Accordingly, in the investigations to follow, it is important to remember that 'substance' simply renders '*ousia*' in its independent sense, and can be roughly interchanged with 'basic being'. This comes closest to the actual locution used by Aristotle.

The first question then concerns what makes a basic being basic, or, in the language we will adopt, what makes a *primary substance* primary. We may begin by considering a dog, Pavlov. Pavlov is often frisky and playful, sometimes protective and predatory, and always a member of the species *canis familiaris*. To describe him in terms countenanced by Aristotle's non-substantial categories, Pavlov may be *in the garden* (place), first *digging a hole* (acting upon), and then *lying down* (position), all the while *weighing twenty kilos* (quantity). If he *is brown*, then he has the quality brown *in* him; by contrast, *being a dog* is *said-of* him. If our treatment of these terms has been apt,[38] then Pavlov is accidentally brown but

essentially a dog. These are all ways of characterizing Pavlov and each finds its place in Aristotle's theory of categories.

At the nexus of these categories, however, sits Pavlov. It seems initially right to allow that Pavlov displays some asymmetry with respect to that which is predicated of him. It would be perverse, if intelligible, to say that the garden is Pavlov-containing, and similarly perverse, and hardly intelligible, to say that brown is Pavlov-in. Aristotle thinks that these perversities reflect a fundamental fact about reality: primary substances are prior to the other categories of being. A primary substance thus requires special consideration by the metaphysician.[39]

Aristotle offers a series of characteristics of substances, some of which are reserved for primary substances alone (*Cat.* 3b10–4a21):

- Every primary substance signifies 'some this' (a *tode ti*), that is, a particular of some sort (*Cat.* 3b10–23).
- Substances have nothing contrary to them (*Cat.* 3b24–32).
- Substances do not admit of a more or less (*Cat.* 3b33–34b9).
- It is most distinctive of substance that it remains numerically one and the same while receiving contraries (*Cat.* 4b10–21).

All of these characteristics help identify features of Pavlov in virtue of which he qualifies as primary. Pavlov is one particular dog; he is thus some particular thing. There is no contrary to Pavlov, as there is, for instance, a contrary to the quality *being large*. Though he may be more or less well behaved or more or less affectionate, Pavlov is never more or less Pavlov. Finally, it is most distinctive of Pavlov's being a substance that he remains numerically identical through change. At first he is a small puppy, and then grows into a large mature dog. Then he was hungry, and now he is sated. Today he is healthy, but tomorrow, sadly, he will be sick. All the while, he is one and the same dog. He persists through change while remaining numerically one and the same.

It is difficult to accept these features as anything approaching individually necessary or jointly sufficient conditions.[40] Thus, while it is true that there is a contrary to the quality white and no

contrary to Pavlov, it is equally true that there is no contrary to the quantity *twenty-five kilos* or to the place *in the garden*. (A contrary is an opposite which is not a contradictory. Although one might speak of *being not in the garden*, or *not twenty-five kilos*, these are contradictories and not contraries. One might equally speak of *not being Pavlov*: 'Cora loves her new puppy, but he is not Pavlov.)' Hence, it would be incorrect to suppose that lacking a contrary is sufficient for being a substance.

The same appears to be the case with respect to what Aristotle calls 'most distinctive' of primary substance, that it 'admits of contraries while remaining one and the same in number' (*Cat.* 4a10–11). This claim seems at once a deep insight about substance-based ontology and an insufficient characterization of substance, or at any rate not yet a sufficient condition for something qualifying as a substance. The deep insight is that substances – entities like Pavlov or for that matter like you, the person reading these words – can remain numerically the same while undergoing changes. Although you are qualitatively different than you were before you had your most recent haircut, your birth occurred well before your new hairdo and, unless your most recent styling was given to you by a mortician, death yet awaits you.[41] Substances may sustain qualitative change while remaining one and the same. Unfortunately, however, it seems plausible to suppose that other sorts of things can admit of contraries while remaining one and the same as well. Storms are now fierce and now docile. A trumpet blast is now loud and now soft.[42] A pain is at first piercing, but then abates and grows dull. If Aristotle is not prepared to admit these as substances, then he must likewise not be prepared to allow that *remaining one and the same while admitting contraries* is sufficient for being a substance.

Perhaps one can respond on his behalf that pains and trumpet blasts are dependent entities and as such do not qualify as primary substances. They are insufficiently autonomous or independent. After all, pains do not float free, visiting this or that subject to cause grief before flitting off to find a new bearer. Pains depend upon their subjects for their existence. If anything, they seem to be non-substance particulars rather than substances. Similarly,

trumpet blasts are precisely sound waves emanating from trumpets. They are thus dependent beings rather than independent beings, as substances are. One might respond along these lines on Aristotle's behalf by arguing that although not only substances admit of contraries while remaining numerically one and the same, only substances manage this feat while not depending upon anything in any other category of being for their existence.

This sort of response invites us into the heart of Aristotle's conception of the relation between primary substances and the other categories of being. He claims directly: 'All other things are either *said-of* primary substances, which are their subjects, or are *in* them as subjects. Hence, if there were no primary substances, it would be impossible for anything else to exist' (*Cat.* 2b5–6). Primary substances are primary because other things depend upon them, whereas they do not depend upon other things. So, primary substances are primary, and other categories secondary.

This passage, somewhat uncharacteristically for the *Categories*, which tends more towards assertion than argumentation, advances a brief – alas perhaps too brief – argument for the primacy of primary substance (**PPS**):

1 Everything which is not a primary substance is either *said-of* or *in* a primary substance.
2 If (1), then without primary substances, it would be impossible for anything else to exist.
3 So, without primary substances, it would be impossible for anything else to exist.

If (**PPS**-3) is true, then we might well suppose that we have good reason to join Aristotle in regarding primary substances as primary.

We should, however, immediately note two features of (**PPS**-3): (i) its modal status; and (ii) its precise entailment relations. As for its modal status, (**PPS**-3) does not assert merely that without primary substances nothing else *would* exist, but that the existence of anything other than primary substances would be *impossible* were there no primary substances. It would follow, if this strong conclusion were established, that if you thought you found your-

self imagining a world of uninstantiated universals in the absence of primary substances, you would be perforce confused or somehow deluding yourself. For if (**PPS**-3) is true, such a world is *impossible*, and so, in the end, unthinkable. That seems a very strong conclusion. As for its entailment relations, it should be noted that strictly speaking, one might grant (**PPS**-3) without ceding categorial primacy to Aristotle's preferred examples of primary substance. That is, given its logic alone, (**PPS**) could be sound even if primary substances depended equally upon other categories for their existence. So, one might once again wonder what made primary substances primary. We will consider each of these features of (**PPS**-3) in turn.

This point about entailment relations is key to our evaluation of the success or failure of the evident anti-Platonic aim of (**PPS**). Plato may justly observe in response to this argument that (**PPS**-3) is in fact logically consistent with the dependence of primary substances on other kinds of being. That is, suppose we grant (**PPS**-3) as it stands. In that case, we agree that without primary substances, nothing else could exist. We might, of course grant this much without allowing that primary substances are therefore *primary*. For (**PPS**-3) in effect claims that the existence of any non-primary substances entails the existence of a primary substance. As far as that commitment goes, however, it might yet equally be the case that the existence of primary substances entailed the existence of other categories of being. Indeed, it seems obvious upon reflection that if there are primary substances, then there must be items in other categories of being as well. If Socrates exists, for example, then although it is a contingent matter that he is pale, he must be some colour or other. The same applies to his shape, location, temporal predicates and so on.

Indeed, there is in this connection a legitimate *ad hominem* argument available to Plato at this point. In the *Pre-categories*, Aristotle himself had treated the *said-of* relation as *essential* predication.[43] It follows on his own terms, then, that if Socrates exists, then so too, of necessity, does the secondary substance to which he belongs. Hence, if primacy is intended to indicate asymmetry with respect to entailment of existence, there is a problem; for it does not and

indeed in Aristotle's own system *cannot*. The existence of Socrates requires the existence of other things no less than they require the existence of Socrates – if in fact they do.

Taking all that together, even accepting (**PPS**-3), we have so far been given no reason to treat primary substances as primary. If primacy consists in ontological independence from other categories, then Aristotle's primary substances are not primary. Perhaps, then, primacy should not be taken in just this way. In that case, however, we are owed an account of what primacy consists in. Thus far, we have seen only that its most natural reading fails.

Moreover, so much is already based on the assumption that we have good reason to accept (**PPS**-3). Do we? (**PPS**) is clearly a valid argument; hence, if its two premises are correct, we are constrained to accept the conclusion. It serves to put the question in a mildly polemical vein, from the perspective of a Platonist who supposes that it is entirely thinkable that there should be a world of uninstantiated universals, who is a committed *ante rem* theorist.[44] Such a theorist thinks there are in fact categories of being whose existence is compatible with the non-existence of Aristotle's primary substances. Does (**PPS**) provide any compelling reason to think otherwise?

(**PPS**-1) should not be accepted without scrutiny. This is the claim that everything which is not a primary substance is either *said-of* or *in* a primary substance. Aristotle says simply that 'this is clear from an examination of the cases' (*Cat.* 2a35–36). Is it? One might initially agree that whatever is white has a surface, and that whatever has a surface has magnitude, and further that whatever has magnitude will have some quantity, and that trivially whatever is a quantity is a quantity of something, evidently some primary substance, so that, finally, whatever is white is ultimately a primary substance. Suppose, though, as the Platonist is disposed to believe, that there are numbers, considered as abstract mind- and language-independent entities. Then the property *being even* will be a property of the number two but not of the number three. If this qualifies as an instance of predication, then it will not follow 'from an examination of the cases' that everything is *in* or *said-of* a

primary substance – unless numbers are also primary substances, along with this man and this horse, something Aristotle does not wish to permit.

To take the matter further, why accept (**PPS**-2), the claim that without primary substances, it would be *impossible* for anything else to exist? Aristotle sometimes asserts this sort of claim in a manner which many find initially intuitive: 'If everyone were well, health would exist, but not sickness, and if everything were white, whiteness would exist but not blackness' (*Cat.* 14a8–9). One might find this immediately intuitive. Indeed, one might assume, where there are qualities, there are things qualified. Qualities like *whiteness* and *being healthy* do not lurk about waiting to pounce on their bearers. On the contrary, non-white surfaces may become white, and people who are sick may become healthy; when and only when they do, whiteness and health come to be.

Upon further reflection, again from the Platonist point of view, this intuition may not seem so secure. Suppose, as Plato himself seemed to believe in the *Republic*, that there is such a thing as justice, but that it has never yet been perfectly realized. Suppose further, though this takes us beyond what Plato expressly maintained, that Justice is an abstract mind- and language-independent entity, a universal capable of being multiply instantiated. In that case, Justice would exist as a kind of regulative ideal. It would itself not be a primary substance, but could nonetheless exist, and *would* nonetheless exist even in the sad eventuality that human beings and their institutions never realized it. This possibility directly contradicts what is asserted in (**PPS**-2), the claim that without primary substances, it would be *impossible* for anything else to exist. Aristotle sometimes seems content simply to assert this claim as if it were unassailable. Without further argument, however, it is unclear why this direct – though metaphysically strident – claim should dissuade the Platonist.

The point here is not that whether or not one endorses (**PPS**-2) depends upon whether one is or is not a Platonist. For (**PPS**-2) is either true or false, and if it is true, then Platonism as characterized is false. Rather, the point is that Aristotle's asserting (**PPS**-2) does not by itself show that it is true: one wants further argumentation

from him on this score. Without additional argumentation, the issue will quickly descend into an unproductive stalemate. Presumably, part of what is at stake concerns the sorts of data available for appeal on either side. The Platonist and Aristotle agree that there are qualities. Aristotle has insisted on a form of *in rebus* realism, while the Platonist is holding out for something stronger, for *ante rem* realism.[45] Among the data evidently countenanced by the Platonist, and discounted by Aristotle, is the modal claim that the permanent possibility of something's being F is already enough to justify belief in the *ante rem* existence of *F-ness*. That is, if there were nothing blue in the world today, it would remain true that there *could* be something blue – and, says, the Platonist, the correct explanation of this possibility implicates us in positing the existence of the quality in question. Aristotle agrees that the non-existence of a quality is consistent with its being possibly realized;[46] but he denies that the explanation of this possibility has the consequence which the Platonist supposes it to have. That may be so, but here again, one can rightly demand of him an alternative explanation. He does not offer one in his *Categories*.

There is something undeniably attractive in Aristotle's suggestion that primary substances are, well, *primary*. Moreover, his preferred candidates, including centrally individual human beings like Socrates, do seem to many to enjoy a kind of ontological priority. It seems entirely appropriate to agree with Aristotle that when the world presents us with the fact of a pale Socrates, the right thing to say is 'Socrates is white' and not 'Whiteness is Socrates', or, still worse, 'Whiteness Socratizes'. To this extent, we are mainly disposed to go Aristotle's categorial way. For this reason, it seems fair to conclude that insofar as he is attempting to explain and illustrate the primacy of primary substance in the *Categories*, Aristotle may be credited with making some impressive progress. At the same time, insofar he is trying to *prove* that primary substances are primary, Aristotle is much less successful. This may be an artifact of presentation, or it may be the basis for a more telling criticism of his treatment of substance. At this juncture, it would be premature to rule out either contention. For as we have seen, the *Categories* may in fact be a sort of synopsis of a

theory which is articulated and defended elsewhere.[47] If that is so, it would be well beside the point to criticize the work for failing to reproduce the arguments it presupposes as established elsewhere. All the same, even in that case one would be right to demand from Aristotle the fuller treatment of substance he elsewhere provides.[48]

4.7 A PUZZLE ABOUT BI-VALENCE AND MODALITY: TOMORROW'S SEA BATTLE

When pressing Aristotle on the primacy of primary substance, a Platonist naturally and appropriately appeals to the modal data supplied by such propositions as 'Though the world is shot through with injustice, it is possible that perfect justice might yet one day be realized', or 'Even though day-glow orange was invented for industrial purposes only in the 1960s, it was possible even before then that nature could have supplied that very colour, perhaps, for example, in the intense glow of a radiant sunset.' Presumably, the author of each of these sentences understands the proposition asserted to be true. What, however, *makes* such sentences true? This is a question which ought to engage Aristotle, since he himself is prepared to imagine a time when there are no sick people; for this is the very time when, he asserts, there would be no sickness (*Cat.* 14a8–9). At such a time, then, the healthy *might* become sick. The healthy, if not actually sick, are nonetheless possibly sick. What, then, is the truth-maker for the claim: *It is possible that a healthy person will become sick tomorrow?*

We have already had occasion to think about the notion of truth-makers when characterizing the notion of *terms* involved in Aristotle's syllogistic and category theory.[49] In the context of the *Categories*, we investigated the metaphysical simples which are the constituents of the truth-maker for 'Socrates is pale', namely *Socrates* and *pallor*. We also saw that the *Categories* confined itself to investigating the natures of such simple terms, by focusing on 'things spoken of without combination' (*Cat.* 1b20). In an allied work, *De Interpretatione*, Aristotle pushes further. In this work, also in the *Organon*, Aristotle investigates semantic units at the next level

of complexity, namely statements, together with, if to a lesser extent, the sorts of complexes which make true statements true (*De Interp.* 16b26–17a37, 17b26–34, 18a28–34; *Cat.* 2a7).[50] While he distinguishes between those sentences which are assertoric and those which are not (*De Interp.* 16b34–17a7),[51] Aristotle does not distinguish, or does not distinguish clearly, between *sentences*, considered as spoken or written tokens of a natural language, and *propositions*, considered as the abstract semantic values or contents of sentences. That allowed, Aristotle nonetheless investigates with rigour a set of questions about the types of semantic attributes we associate with both sorts of entity. For our purposes, we can simply speak of *statements* indifferently, and harmlessly, as either sentences or propositions.

Foremost among Aristotle's investigations into statements is a striking discussion of those which concern the future, because such statements seem to provide surprising ammunition for a view Aristotle is keen to reject, namely *fatalism*:

- *Fatalism*: Since whatever is true is necessary, and since it is pointless to deliberate about what necessarily will or will not be, it is pointless to deliberate about the future.

The fatalist reasons that since we cannot change what is in fact going to happen, all planning and deliberation is futile. If something is going to happen anyhow, we may as well simply accept that fact and resign ourselves to our fate. So, why deliberate and plan? When we plan and deliberate, we are only deceiving ourselves.

Why, though, should anyone believe that whatever happens happens of necessity, that is, that for any randomly selected true statement *p*, *p* is not only true but necessary? One reason for being tempted by such a claim derives from reflection on a category of future-tensed statements, *future contingents*. Some find it evident that if it is now true *that there will be an avalanche somewhere in Austria tomorrow*, it is then *necessary* that there will be an avalanche somewhere in Austria tomorrow. After all, if it is already true that something will happen tomorrow, there is nothing anyone can do

to bring it about that it will not occur – else it would not already be true that it will occur. Further, if there is nothing anyone can do to stop something occurring, then the occurrence of that event is necessary. Hence, if it is true that something will be, it is necessary that it will be. Now, surely it is either true or false that there will be an avalanche somewhere in Austria tomorrow. From the fatalist's point of view, it does not matter whether the statement is true or false, but only that it is one or the other. The fatalist's contention is just that *if* it is true, it is already true; but if it is already true, nothing can be done to make it otherwise. Hence, if it is true, it is necessarily true. By the same line of reasoning, *if* it is false, then it is necessarily false. In either case, the outcome is necessary. Of course, we may not *know* which of the two outcomes is necessary, but that is a mere epistemic failing. Someone may not know that objects of different weights fall at the same speed, but that lack of knowledge does nothing to impugn the necessary consequences of gravity being a constant force.

Aristotle seeks to rebut this line of reasoning, not least because if it were correct, 'It would not be right to deliberate or to take anything into account, since we do so supposing that if we do *this*, then *that* will occur, or if we do not, then it will not occur' (*De Interp*. 18b31–33). Yet, as he proceeds to contend:

> This is impossible. For we see that among the things that will be some have an origin in both deliberation and in what we do. We see moreover that in general for things which are not eternally actual,[52] there is the possibility of both being and not being: in these latter cases, in which both alternatives are possible, they may be or they may not be – and so they may or may not *come* to be. And many things are clearly of this sort. For instance, it is possible for this cloak to be cut up even though it will not be cut up, but will wear out first. It is equally possible for it not to be cut up; for it surely could not have turned out that it wore out first unless it were in fact also possible for it not to be cut up. So also is it for other events accorded this sort of possibility. It is clear, then, that not everything is or comes to be of necessity.
>
> (*De Interp*. 19a7–18)

Aristotle's brief against fatalism begins in the appreciation of a simple appearance (*phainomenon*): not only do we deliberate and do things, we *observe* that when we deliberate and take action, we make things happen.[53] I may consider whether I should cut up an old coat, in order to use the scraps in a rag rug I am currently making with sundry bits of cloth. I weigh the pros and cons, thinking that the coat is old and ill-fitting, but that it nonetheless suffices to keep me warm, and that if I cut it up, I will have to replace it with another. I decide that I can afford a new coat and that it really is time to retire the old one, and so I commence cutting it up. You can observe me, and I can observe myself, throughout this process. Evidently, my deliberation and action eventuated in making one of two possibilities actual. At the end of my cutting, the coat is reduced to a pile of fabric strips. Yet it was never necessary that this be the outcome. I could well have reached a different conclusion by deciding to wear the coat another year, because I wanted to spend my money elsewhere, by going to the opera perhaps.

If this is how things appear, then why should anyone be tempted by fatalism? Interestingly, the problem arises when we consider a number of theses, evidently accepted by Aristotle in *De Interpretatione*, which though individually attractive may seem to eventuate in a variety of fatalism.

The first is the thesis of *bi-valence*:

- Bi-valence: necessarily, for any statement *p*, *p* is either true or false.

According to the principle of bi-valence, there are no truth-value gaps. (Recall that we are treating statements as assertoric sentences or propositions.) Let *p* be the statement: *Dr MacPherson has three cats*. In this case, if Dr MacPherson has three cats, then *p* is true, but otherwise *p* is false. There is no case in which *p* is neither true nor false. The same holds for each of the following: *England won the World Cup in 2006*; *The current Prime Minister of India is married*; *Torstrick took a nap after lunch today*. Initially at least, bi-valence seems to hold for every statement, and the reason is not far to see. A statement

makes an assertion about the world. If what *p* asserts obtains, then *p* is true; but if not, *p* is false. This holds even for statements whose truth-value is unknown, or is perhaps even, practically speaking, unknowable. So, for example, consider this statement: *The number of the molecules in Dora's scarf is even*. Let us suppose that this fact is never uncovered, and is even, again practically speaking, unrecoverable. Even so, the statement reporting this fact is either true or false, and is made to be true or false by the state of the world. If the number of molecules is even, then the statement is true, but otherwise not.

To this first plausible-sounding thesis, we may add a second, the *fixity* of the true:

- Fixity: if *p* is true, then *p* cannot be made to be false.

Here the idea is that once something is the case, it cannot be undone. *Fixity* is a sort of spilt-milk principle: once it is the case that the milk is spilt, it can be cleaned up but not made to be unspilt. Once the milk is spilt, then the statement that *the milk was spilt* is permanently true. Nothing can be done to change its truth-value from true to false. Now, someone might reasonably object to *fixity* as follows. If *Shelby is sad* is true, perhaps, after he is cheered by a witty joke, it will be false. In that case, *fixity* seems to fail: what was true is made to be false. So much, however, does not really address *fixity*. Really what is being said by *Shelby is sad* is that *Shelby is sad at* t_1, where t_1 is some determinate time. It is just that in our normal discourse, temporal indices are implicit and assumed, rather than explicit and made overt. When Shelby is later made to be cheery, it remains true that *Shelby was sad at* t_1. That fact, once a fact, is fixed. Consequently, the statement reporting it, once true, is fixed as true. It is, again, permanently true. No amount of cheering Shelby will alter that fixed fact that he was sad at t_1; so, no amount of cheering Shelby will make a statement *p* made true by that fact false.

Armed with these two theses, it is easy to imagine someone calling attention to the status of what are called *future contingents*, that is, future-tensed statements making claims about what may or may not come to pass. Aristotle's example is *that there will be a*

sea-battle tomorrow. Today we may think that such a battle is likely, but not inevitable. Perhaps, as we hope, diplomacy will succeed and dampen the gathering hostilities. Then again, we may think otherwise. We doubt the efficacy of diplomacy and so steel ourselves for battle. In either case, however, we acknowledge that the future is open: things may develop such that there is a sea battle or they may not. Suppose, however, that our gloomy prognostications – although we do not now know this – are in fact going to prove correct. Then, it seems, the statement *that there is going to be a sea-battle tomorrow* is true. If it is true, however, it is fixed. If it is fixed, then it is necessary. If it is necessary, it cannot be altered; hence, there is no point in deliberating about it. That makes as much sense as saying that we can deliberate about whether an apple will fall to the ground tomorrow when dropped. To make matters worse, given *bi-valance*, we can know now that one of the pair of following statements is true – again irrespective of whether we now know which: *that there is going to be a sea-battle tomorrow* or *that there is not going to be a sea-battle tomorrow*. So, we can infer that one or the other of these is fixed. Given that the state described by the fixed truth will obtain, and obtain of necessity, deliberation must be illusory. Certainly it is a waste of time. Accordingly, if we think our deliberation can affect the course of the future, we are woefully misguided.

Taking these sorts of considerations together, we can consider the following *Argument for Fatalism* (**AF**):

1 It is true *that there will be a sea-battle tomorrow* or it is true *that there will not be a sea-battle tomorrow*.
2 Suppose that it is true *that there will be a sea-battle tomorrow*.
3 If (2), then it is fixed that there will be a sea-battle tomorrow.
4 If it is fixed that there will be a sea-battle tomorrow, then it is necessary that there will be a sea-battle tomorrow.
5 So, if it is true that there will be a sea-battle tomorrow, it is necessary that there will be a sea-battle tomorrow (2, 3, 4).
6 Suppose, on the other hand, that it is true *that there will not be a sea-battle tomorrow*.
7 If (6), then it is fixed that there will not be a sea-battle tomorrow.

8 If it is fixed that there will not be a sea-battle tomorrow, then it is necessary that there will not be a sea-battle tomorrow.
9 So, if it is true that there will not be a sea-battle tomorrow, it is necessary that there will not be a sea-battle tomorrow (6, 7, 8).
10 It is pointless to deliberate about what is necessary.
11 Hence, deliberation about whether there will be a sea-battle tomorrow is pointless (1, 5, 9, 10).

Plainly, the example of tomorrow's sea-battle is a randomly selected instance of a future contingent. We are accordingly entitled to generalize the result obtained in (**AF**-11). Everything which will be, of necessity, will be, whereas everything which will not be, of necessity, will not be. There is, of course, no point in deliberating about what is necessarily as it is. We should, consequently, cease engaging in futile processes of deliberation. We would do well rather simply to submit ourselves to our fate, whatever that may be. We should be fatalists.

The idea behind the argument is that (**AF**-2) and (**AF**-6) exhaust the possibilities. Either there will be a sea-battle tomorrow or there will not be. After all, (**AF**-1), which follows directly from the principle of bi-valence, tells us that one or the other of these suppositions must be true. (**AF**-3) and (**AF**-7) are simply consequences of the principle of *fixity*, that once something is true, it is fixed. (**AF**-4) and (**AF**-8) seek to tease out a consequence of fixity, by moving from a proposition's being fixed, to its being necessary. From there, (**AF**) simply concludes that there is no point in deliberating about the necessary. In general, then, deliberation about the future is pointless.

As we have seen, Aristotle rejects fatalism, and so rejects the conclusion to this argument. *De Interpretatione* 9 offers his reaction to (**AF**). Unfortunately, almost from its first appearance, scholars have been divided about how best to conceive the strategy of this chapter. In fact, the chapter gives some indication of at least two quite different reactions to the argument.

In both the opening and the conclusion of *De Interpretatione* 9, Aristotle seems to respond simply by rejecting bi-valence. In his summation, at the end of the chapter, he claims: 'Consequently, it

is clear that it is not necessary that in the case of every affirmation and negation of opposites, one is true and the other false' (*De Interp*. 19a39-b2; cf. 18a28–34, 18b19–20). This sounds, at least on the surface, like a straightforward rejection of bi-valence for certain statements, including, centrally, future contingents. On this approach, Aristotle rejects (**AF**-1) and then stops. Perhaps his doing so may seem a winning strategy. One might after all conclude that it is reasonable for bi-valence to hold – except for statements that are both future and contingent. Indeed, what makes a statement *future-tensed* is precisely that it makes a claim about something which has yet to happen; and what makes a future-tensed statement *contingent* is that it makes this statement about something which is not necessary. So, future contingents ought not be regarded as either true or false. They are open with respect to their truth-value. Hence, one might conclude, bi-valence fails for them. In terms of (**AF**), then, according to this strategy, Aristotle rejects (**AF**-1) and so is not constrained to agree that it is either true or false *that there will be a sea-battle tomorrow*.

This is, in fact, the most traditional reading of the chapter. Still, if it is Aristotle's preferred solution, some distressing results follow. First, he elsewhere seems firm on the question of bi-valence, and does not mention exceptions. For example, earlier in *De Interpretatione*, and even in *De Interpretione* 9 itself, he several times asserts bi-valence or a near entailment of it without restriction or qualification (*De Interp*. 17b26–30; 19a30–31). More importantly, if he means to defeat (**AF**) merely by rejecting its first premise, on the grounds that bi-valence fails for future contingents, then Aristotle evidently concedes far too much to the fatalist. For the remainder of the argument carries the crucial fatalist contention, that *p* entails that *necessarily p*. This seems, however, a plain confusion. Even for true present and past tense statements this inference is false. It is true that Tony Blair is Prime Minister of Great Britain in 2006; but it is not necessary that this is so. On the contrary, this is a contingent fact. Labour might have lost the last election. So, in this as in all other contingent cases, *p* does not entail *necessarily p*. Truth alone does not confer necessity. It would seem to be a pity if Aristotle were to miss this simple and obvious fact altogether.

Fortunately, *De Interpretatione* 9 also provides evidence of a second sort of rejection of fatalism, one focused on *fixity*, the claim that once something is true, it is fixed. Aristotle makes the following observation:

> It is necessary, whenever anything is, that it is; and it is necessary, whenever anything is not, that is not. Nevertheless, it is not the case that whatever is necessarily is, or that whatever is not necessarily is not. For these are not the same: (i) something necessarily is, whenever it is; and (ii) something necessarily is, without qualification. And the same holds for what is not.
>
> (*De Interp.* 19b23–27)

On one interpretation of these lines, Aristotle is drawing a distinction between two kinds of necessity: *hypothetical necessity* and *unqualified necessity*. The difference is this: hypothetical necessity ranges over conditionals, whereas unqualified necessity does not.[54] One may say, truly, when Jake is catching a fish:

- Necessarily, if Jake is just now catching a fish, then Jake is fishing.

without being licensed on that basis to infer validly:

- Jake is necessarily fishing.

The first is an instance of hypothetical necessity and the second of unqualified necessity.[55] In distinguishing them, Aristotle is looking to undermine not bi-valence, but the fatalist's flawed logic.

The flaw emerges when we focus on an ambiguity in the notion of *fixity*. Taken one way, this is a trivial principle, holding that *if p is true, then it is fixed that p is true*. So much seems unobjectionable, especially if we bear in mind that any full statement of *p* makes explicit any implicit temporal index, for example *Socrates was seated at* t_1. Call this the *benign* reading of fixity. A stronger claim has it that *if p is true, then p is necessarily true*. Call this the *aggressive* reading of fixity. Notice now that (**AF**-4) and (**AF**-8) are true only on the

aggressive reading of fixity. These premises hold if it is fixed that there will be a sea-battle tomorrow, then it is necessary that there is a sea-battle tomorrow. In fact, these premises merely *assert* the aggressive reading of fixity. How, though, do we arrive at this aggressive reading? One route is precisely by confusing hypothetical and unqualified necessity, by arguing, as Aristotle cautions against:

- Necessarily, (if *p* is true, then *p* is true).
- *p* is true.
- Therefore, *p* is necessarily true.

Short of this sort of invalid inference, we have no reason to move from the fixity of a truth to its necessity. So, we have no reason to accept the aggressive reading of fixity rather than the benign reading. Unfortunately for the fatalist, the benign reading of fixity is of no use to (**AF**).

Taking all that together, on the basis of his distinction between hypothetical and unqualified necessity, Aristotle is entitled to complain against the fatalist that either (**AF**-4) and (**AF**-8) are false, because only the benign reading of fixity has been assumed, or (**AF**-4) and (**AF**-8) rest upon a modal confusion, because each conflates two notions of necessity. In either case, since (**AF**-4) and (**AF**-8) are crucial to the fatalist's argument, (**AF**) as a whole fails. While it is difficult to conclude that this is Aristotle's final, considered response to the threat of fatalism – since *De Interpretatione* 9 is inchoate and underdeveloped in several ways – this approach has at least the twin advantages of saving Aristotle from an unnecessary denial of bi-valence and of putting on display a modal fallacy of which the fatalist is in fact surely guilty.

Of course, so much points to but two interpretive strategies for approaching the complex, tangled, and richly suggestive text of *De Interpretatione* 9. What is striking in the present context is how close these difficult issues of truth and modality lie to Aristotle's doctrines of terms and statements. Already in his early works, Aristotle shows himself alert to issues which remain central to

the philosophical tradition which follows his treatment of them. If he has not had the last word on these topics, their subsequent history owes much to the manner in which he inaugurated their discussion.

In this connection, it is noteworthy in closing to observe that Aristotle's second, more telling objection to (**AF**) draws upon important modal data, by exposing what is plainly a modal fallacy in one stage of the fatalist's reasoning. Aristotle is accordingly in a defensible position when seeking to block the fatalist's inference from truth to necessity. At the same time, however, he implicates himself in a form of reasoning which, however justifiable, turns back upon Aristotle in such a way as to put further pressure upon one aspect of his theory of categories, namely his case for the primacy of substance.[56] We saw that Aristotle wishes to argue for the strong modal conclusion that 'if there were no primary substances, it would be impossible for anything else to exist' (*Cat.* 2b5–6). His brief argument hardly proved up to the task of establishing a conclusion with this modal status. Now, given his rejection of fatalism, we can appreciate that Aristotle makes his contention in this regard still more difficult. For the modal clarity and precision Aristotle deploys so adroitly against the fatalist is now available to the Platonist, in his assessment of Aristotle's argument for the primacy of primary substance. It now seems clear, in Aristotle's own terms, that from the bare fact of there being no substances, it does not follow that there are *necessarily* no substances. Once that is appreciated, it becomes still clearer that Aristotle's argument for primacy is at best incomplete. Even if he can establish that, necessarily, if there are no primary substances, nothing else will exist, Aristotle will not be licensed to infer from the non-existence of primary substances that all other beings are *impossible*. We see, consequently, that in his fully defensible rejection of fatalism in *De Interpretatione* 9, Aristotle incurs a debt to be discharged in his own defence of his commitment to the primacy of primary substance. Here too, then, we find the close connections among Aristotle's early treatments of truth, modality, and the categories of being intersecting so as to reveal the depth and complexity of their unavoidable interplay.

4.8 CONCLUSIONS

Aristotle's early ontology contains work of lasting value, but also a fair amount which proves resistant to easy interpretation and analysis. We make some progress by recognizing an anti-Platonic stance in at least some aspects of Aristotle's earliest efforts. Thus, although the work which has come down to us under the title of the *Categories* may well not have been conceived by Aristotle as a single, unified treatise, we can appreciate the subtly of its metaphysical schema when we assess the anti-Platonic purport of the first two of its three main divisions – the *Pre-Categories* (*Antepraedicamenta*; *Cat*. 1–3) and the *Theory of Categories* (*Praedicamenta*; *Cat*. 4–9). In the *Pre-Categories*, Aristotle first offers a brief overview of his apparatus of homonymy, synonymy, and paronymy, and then moves directly into a four-fold division given by permutations of two forms of predication, *said-of* (*legetai*) and *in* (*en*). These distinctions help bring into sharp relief the complexity of predication relations too readily obscured by natural language. This in turn helps Aristotle isolate homonymy where a Platonist might too easily assume univocity. It will become a staple of Aristotle's philosophical theorizing throughout his long career that the world offers up less univocity than Plato characteristically assumes.

Still, it should not be inferred that Aristotle never finds univocity where Plato too finds it. On the plausible assumption that the two forms of predication distinguished in the *Pre-Categories* track, or nearly track, a division between essential and accidental predication, Aristotle's likely intention in that section of the work is to divide universals into those predicated essentially of primary substances and those not so predicated: substantial universals are predicated of substances alone, and always essentially, while non-substance universals may be predicated accidentally of substances but essentially of non-substances. That is, *being human* is predicated only of humans, and always essentially, whereas *being white* may be predicated accidentally of Socrates but essentially of Socrates' whiteness. Certainly in the first of these cases, Aristotle expects perfect univocity, since the essence of all humans is the same. Even so, Aristotle regards this sort of univocity as carrying yet

another sort of anti-Platonic purport. He thinks that particulars, like universals, also sort themselves into the substantial and the non-substantial. Socrates' whiteness is *in* Socrates, not as a part, and it cannot exist without him because it is dependent upon him for its existence. Thus, non-substance particulars depend for their existence on substantial particulars. So too, according to Aristotle, do universals of all kinds. At the crux of this predicational nexus is something neither *said-of* nor *in*: Socrates, a primary substance, something not predicable of anything at all.

This primary substance is the centrepiece of the *Theory of Categories* (*Cat.* 4–9), where Aristotle first retails his ten categories of being and then characterizes, in varying degrees of detail, most of the individual categories, focusing primarily on substance, quantity, quality, and relative, while mentioning some of the remaining categories only in passing and leaving the rest aside altogether, owing, he says, 'to their obviousness' (*Cat.* 11b10). What is not so obvious is the mechanism by which Aristotle arrives at just his ten preferred categories of being and no others. He does not specify his procedure in the *Categories*, and thus leaves it to his readers first to determine how one might generate these categories and thereafter to assess the justifiability of the procedure adopted.

Nor is it obvious how one should think about the nature of substance (*ousia*) in the *Categories*. In both the *Pre-Categories* and the *Theory of Categories*, Aristotle treats primary substance as primary, evidently in the belief that all other categories of being depend upon primary substance for their existence. A Platonist may reasonably question this belief, only to discover that the *Categories* provides no more than a brief argument on its behalf (*Cat.* 2b5–6[c]). This argument, though suggestive, is far from conclusive. Thus, in this respect at least, the *Categories* promotes a view which, whatever its initial plausibility, stands in need of further development and defence.

That said, and whatever its provenance, the *Categories* is a bold and strikingly original piece of fundamental philosophical investigation. So too is the *De Interpretatione*. The first of these works inaugurates a branch of metaphysical inquiry which takes us

quickly to the limits of our conceptual scheme – and, indeed, beyond, if some of Aristotle's detractors are to be credited. The second inaugurates an inquiry into truth and modality by dissecting a pattern of reasoning which continues to bedevil thinkers down to the present day. Here too, however, Aristotle has found his detractors: some see in his response to fatalism a misdirected objection to a genuinely flawed, if seductive form of argumentation whose crucial misstep he overlooks. On another understanding, however, he has exposed a plain, if persistent, modal fallacy in the fatalist's argument.

Consequently, it is by no means clear that Aristotle's detractors are to be credited regarding either the *De Interpretatione* or the *Categories*. In any event, whatever shortcomings or unfinished business we may have identified in Aristotle's early ontology, we have certainly been given no reason to countenance doubts about the enterprise of category theory as such. On the contrary, Aristotle seems entirely right to assume that if we are to engage in metaphysical speculation of any sort – about the nature of change, or persistence, or time, or truth – then we will be constrained in short order to reflect upon the basic structures and furnishings of the intelligible universe. We will, that is, find that our views carry with them, unwittingly or not, determinate categorial commitments; it accordingly behoves us to reflect upon the structures those commitments commend. For the same reason, whenever we reason about the future, we place ourselves into modally treacherous territory. If we are not alert to missteps in the fatalist's perennially alluring overture, we may find ourselves wondering about the credibility of some of our most immediate and palpable appearances. For example, if the fatalist challenge cannot be rebutted, we are constrained to question whether our presumption that deliberation is directed towards a genuinely open future is in fact tenable. If it is not, then the appearance of our deliberation is illusory. Aristotle thinks he can preserve this appearance, because he believes that he can successfully turn back the fatalist's argument.

In these ways, Aristotle's early works provide a framework for thinking about truth, modality, predication, and substance. As we

turn to his investigations into nature and change, substance and the soul, the good for human beings and the best form of political association, we will find Aristotle appealing again and again to his theory of categories, which proves to be a kind of scaffolding for all of his philosophy. In this respect, Aristotle's theory of categories complements his four-causal account of explanatory adequacy: he thinks we have complete explanations when we specify all four causes, though he finds it necessary to articulate these explanations within his preferred categorial framework. Strikingly, however many expansions and modifications he makes to each of these overarching frameworks, Aristotle never repudiates either. It is for these reasons impossible to arrive at a satisfactory understanding of his thought without first coming to some reasonable understanding of both.

FURTHER READING (* = ESPECIALLY SUITED TO BEGINNERS, IN TERMS OF CLARITY OR ACCESSIBILITY)

Primary Sources

Aristotle, *Categories*, esp. 1–5; *De Interpretatione*, esp. 9; *Topics* i 9

Secondary Sources

*Ackrill, J., *Aristotle's Categories and De Interpretatione*, trans. with notes and glossary (Clarendon Press: 1963)

Fine, G., 'Truth and Necessity in *De Interpretatione* 9', *History of Philosophy Quarterly* 1 (1984), pp. 23–47

*Frede, D., 'The Sea-Battle Reconsidered: A Defence of the Traditional Interpretation', *Oxford Studies in Ancient Philosophy* 3 (1985), pp. 31–87

*Studtmann, P., 'Aristotle: Categories', *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu/entries/aristotle-categories/)

*Weidamann, H., '*Aristotle's De Interpretatione*', in C. Shields, ed., *The Oxford Handbook on Aristotle* (Oxford University Press: 2007)

Whitaker, C. W. A., *Aristotle's De Interpretatione: Contradiction and Dialectic* (Oxford University Press: 1995)

Five

Puzzles of Nature

5.1 CHANGE

Unlike the *Categories*, a work at times frustrating in its brevity and paucity of argumentation, Aristotle's *Physics* is a full and rich treatise, brimming over with intricate and complex explorations of a wide range of topics, all centrally implicated in our theorizing about the physical world. The *Physics* is not, of course, a work of the sort we find in modern quantitative physics. It is, rather, a puzzle-driven inquiry into features and facets of nature at their most general level.[1] Fundamentally, says Aristotle, nature is a realm of change (*kinêsis*).[2] Change, though, is puzzling in a variety of ways, and even when we have an adequate framework for investigating nature, we encounter surprising difficulties about the commonplace. Thus, after developing his four-causal account of explanatory adequacy,[3] Aristotle deploys this framework in an effort to resolve puzzles ranging from Zeno's paradoxes of motion to problems of time, number, and the infinite, all of which are, he contends, ultimately puzzles about change; and he further tries to show, by means of an audacious and intriguing argument, that the bare existence of change requires the postulation of a first cause, an unmoved mover whose necessary existence underpins the ceaseless activity of the world of motion, some minute cross-section of which undeniably pervades our daily experience.

We see, hear, and smell change every day. We imagine changes for the better and fear changes for the worse. We change our locations, by moving about from place to place. We are born, grow up, grow older, die. We change our minds and our beliefs; we are

perplexed by the strange and discordant changes we encounter in our dreams. In all these ways we change – and experience change. Surely, then, we know what change is.

If we know *what* change is, and not merely *that* change is, then we should find ourselves in a position to provide an account of change, preferably an essence-specifying account.[4] So, what is change? In the schema we have developed, answering this question implicates us in filling out the right side of this definition:

- *c* is an instance of change $=_{df}$ . . .

It is not easy to complete this task in a non-trivial way. Aristotle's approach will in fact require a fair bit of technical machinery, including appeals to his category theory,[5] his hylomorphism, and his general accounts of potentiality and actuality.[6]

Perhaps Aristotle would not even have been pricked to attempt an analysis of change were it not for the fact that he was aware of formidable challenges to our comfortable confidence concerning our experience of change. We have met one such challenge from Parmenides, who sought to show that all of our putative experience of change is illusory: we cannot experience change, because *change is impossible*.[7] Ultimately, Parmenides' argument proved uncompelling; now, however, we shall meet a still more formidable challenge emanating from Parmenides' student, Zeno.[8] We have also seen already that Aristotle introduced and justified his hylomorphism partly in order to turn back Parmenidean challenges: he appeals to the existence of form and matter in order to underwrite the possibility of change. He argued, in effect, that if change is possible, then there exist form and matter; change is actual, and hence possible; therefore, there are form and matter.[9] If that line of argument is sound, then we have in place the basic elements of Aristotle's hylomorphism. We do not thereby, however, arrive at an account of change.

This is unfortunate, because change is the fundamental concept of nature. If we do not know what change is, we have no understanding of nature; and if we have no understanding of nature, we have failed to achieve knowledge in one of the three branches of

theoretical science.[10] It consequently falls to the natural philosopher, the *phusikos* as Aristotle calls him, to offer an analysis of change or motion:

> Since nature is a source (*archê*) of motion (*kinêsis*) and change (*metabolê*), and the course of our inquiry concerns nature, we must not neglect the question of what motion (or change) is, since if we are ignorant about what this is so too are we ignorant about nature. Once we have determined what motion is, we must endeavour to tackle in like manner what follows in its appropriate order.
>
> Change seems to be continuous, and the first thing manifested in the continuous is the infinite. This is why it so often falls to those defining the continuous to attempt an account of the infinite: being continuous is being divisible into infinity.
>
> In addition to these matters, change is impossible without place, void, and time. It is clear, then, because of these relations, and also because of their being common and universal to all, that we must inquire into each of these, arranging them in advance, since a study of more specific topics is posterior to a study of the more common topics. But first, as we have said, our inquiry is into motion.
>
> (*Phys*. 200b12–25)

In this passage, Aristotle previews a good deal of his inquiry into physical matters. Change, he thinks, is a kernel concept for physics, because its analysis implicates one in reflecting on continuity, which is infinite divisibility; hence physics must reflect upon infinity itself. Further, to many, motion seems possible only if there are place, void, and time: spatial motion is motion over time, from place to place, and so, some suppose, through the void of space. It will turn out, according to Aristotle, that those who suppose that motion requires the existence of the void are mistaken. This proves fortunate, since, as he later argues, there is no void (*Phys*. 216b20–21).

Aristotle begins his account of change by appealing to the framework of his categories:[11]

> Apart from things being changed, there is no change. For what changes always changes either in substance or quantity or quality or in place – and we claim that it is not possible to identify anything common to these, which is neither a particular thing nor a quantity nor a quality nor any of the other things categorized. Consequently, there is no motion or change apart from the things mentioned, since there is in fact nothing beyond the things mentioned.
>
> In each of these cases everything is in one of two ways. So, for example, in the case of a particular thing, it has either a form or a privation; in the case of quality, the light or the dark; in the case of quantity, the complete or the incomplete. Similarly, in the case of local motion we have up or down, or light or heavy. Consequently, the kinds of motion and change are as many as the kinds of being.
>
> (*Phys*. 200b32–201a9)

In speaking this way, Aristotle means that every change (i) requires the existence of something changing; (ii) is such that it takes place *within* a definite category; and (iii) involves the loss of one contrary in favour of another.

More fully, Aristotle has so far maintained, beginning with the last two conditions, (ii) and (iii), that change involves contraries, but only within some category or other. Nothing, properly speaking, changes *from* being blue *to* weighing eight ounces; rather something changes within the category of quality, from being blue to being red, or within the category of quantity, from weighing six ounces to weighing eight. In the case of qualities, a change from one colour to another presupposes a gain and loss along a determinate colour spectrum. To take a case initially favourable to Aristotle's point of view: Socrates changes when he becomes tanned, where his change is upon analysis shown to be the loss of one contrary, pallor, in favour of another, darkness, within the category of quality (hence, 'qualitative change'[12]).

The first condition (i) may seem too obvious to mention: clearly, there is no change unless there is something which is changed (*Phys*. 200b33–34). If we regard this as all too obvious, it is worth noting that this condition has not always been acknowledged

(see *Meta.* 1010a15–25). Indeed, it being acknowledged was one of the key motivations for accepting hylomorphism: all change requires a complex, that is something persisting and something gained or lost.[13]

To elaborate this basic point further, we may think of an elegant dining room, empty except for a large mahogany table surrounded by eight handsome chairs. Suppose, now, that although we do not see them moving, someone informs us that the chairs around the table are in fact *left-change-chairs*. Each left-change-chair, she suggests, is such that it rests for one minute and then becomes the left-change-chair to its left. *Becomes* the chair to its left? Yes, she says, becomes the chair to its left. No chair is ever in two places at once, of course, that being impossible for chairs, as for other physical objects; yet, she continues, in the circumstance envisaged there are never two chairs overlapping in one place, since each becomes the left-change-chair to its left at the instant the left-change-chair to its right becomes the left-change-chair to *its* left. So, after four minutes, each left-change-chair has travelled half-way around the table and after eight minutes, it arrives back where it began and begins its journey around the table anew. Yet, watching the table and chairs all the while we observe no motion.

If we object and insist that the *chairs* are not moving, that if they were, surely we could *see* them moving, perhaps our interlocutor will agree. The *chairs* are not moving, she allows, but the left-change-chairs nonetheless do move – though upon reflection she now concedes the left-change-chairs overlap in space with the ordinary, boring stationary chairs. In all likelihood, at this point, we will stop talking to this person: we will be inclined to say that there are no left-change-chairs, and so that there is nothing there to change. If we are confident on this point, it is only because we agree, first, with Aristotle's (i), that change requires the existence of something changing, and second, with his further contention that change is continuous and not gappy, as the proponent of change pertaining to left-change-chairs would have it.[14] Further, we expect the process of change in the form of locomotion to be in principle detectable by the senses; but evidently, on the

hypothesized left-chair-change variety of change, change would involve no process, and so no process detectable by the senses, but only a result, namely a left-change-chair's having changed to the left.

When he insists that change requires a continuing subject, Aristotle rejects the extravagance of this sort of hypothesis. Importantly, he does so not only by appeal to his basic hylomorphism. Rather, after invoking this framework to account for change through continuity, Aristotle immediately adverts to the apparatus of actuality and potentiality it affords:

> With respect to each kind of thing, we distinguish being in actuality or in potentiality; the actuality of what is potentiality, insofar as it is this sort of thing, is change.
>
> (*Phys*. 201a9–11)

In appealing to actuality and potentiality, Aristotle seeks to situate his approach to the nature of change in his broader metaphysical framework. His basic impulse is to suggest that change can be partly explicated in terms of the already entrenched notions of actuality and potentiality, which he elsewhere seems to accept as primitive, though explicable.[15] Working within this framework, Aristotle offers the following deceptively simple analysis of change:

- Change $=_{df}$ the actualization of what is potentially F insofar as it is potentially F.

This definition requires some explication.

Let us begin with a simple example, following Aristotle. A pile of lumber is potentially a house. When built into a suitable house form, the lumber is actually a house. Clearly there is a process which takes the lumber from being a disorderly pile to being a completed house. Now, the process of its being actualized *is* its changing. Curiously, Aristotle does not rest there. Instead, he adds that change is to be specified relative to a particular potentiality. As he says, a change is the actualization of what is potentially F *insofar as it is potentially* F. Why not say simply that change is the actualization of what is potentially F and stop there?

There are two reasons.[16] First, we might speak of the actuality (*energeia*) of a pile of lumber not in terms of the *process* of actualization (also *energeia*), but rather in terms of the *result* of the process, that is, as the product. An actualized pile of lumber is a house. A house, though, is not a change, but is rather a product of a change. So, in the first instance, Aristotle means to caution that the change is the process, indeed the continuous process, occurring in the subject being changed (the pile of lumber) just until the change is complete and the result of the change obtains (the house). Thus, says Aristotle, 'the actualization of the buildable insofar as it is buildable, is building' (*Phys.* 201b10). Second, and perhaps more significantly, Aristotle is again concerned to insist that change always occurs within a category. One might speak truly, if misleadingly, of the actualization of something which is potentially F without speaking of its being actualized insofar as it is F. Thus, again, a pile of lumber is potentially a house. This same pile can also change simply by changing its location, while remaining a pile. Its changing into a house also involves, it seems, the lumber's changing location. Still, a change in location is a change in the category of place, and not a case of generation. Hence, a change in the category of substance, even if concomitant with a change in the category of place, is not itself a mere instance of change in location.

Because he accepts these two considerations together, the need to keep change within a category and the need to specify precisely which change is in view, Aristotle is inclined to speak with narrow specificity: a change is the actualization of something potentially F insofar as it is potentially F. That is, a particular change is a change along the dimension of a denominated capacity within a category. Although the lumber undergoes locomotion just when its capacity to be a house is actualized, its change into a house is not the same as its change in place. For, again, it might actualize that potentiality, and change in respect of place, without ever becoming a house.

In sum, then, a change is a continuous actualization of a subject's potentiality for being F insofar as it has that potentiality: indeed the process of change *is* that potentiality's being made

actual. Change involves a subject undergoing a process of actualization in respect of one of its potentialities, and so requires a persisting subject. Aristotle assumes, understandably, that no potentiality is free-floating. Rather, every capacity is rooted in some categorial fact about the subject whose capacity it is. Further, and importantly, every change occurs within some category. Thus, if at one and the same instant, a cook adds green food colouring *and* a half-cup of flour to a pile of dough when he is making Christmas cookies, then though the ball of dough changes in quality and quantity at once, these changes are nonetheless distinct. The dough does not change from being beige to weighing 120 grams or from weighing 60 grams to being green. Rather, its various changes are the actualizations of *category-specific potentialities*. Finally, a change occurs just while the continuous process of actualization occurs. When the dough has become green, its change is in that respect complete. Once it is actually green, the dough no longer has the potentiality to become green, any more than a pile of lumber has the potentiality to become a pile of lumber. Hence, change is the process of actualization, and not the product or state resulting from that process. By the time we reach that stage, the change is complete.

5.2 THE INFINITE

One of the several absurdities associated with the possibility of left-change-chairs was that their change, if they could exist and could change, would be gappy. More specifically, they would suffer no *process* of change, since change for them would be instantaneous. Still, if there were a change, there would be two discrete termini to the change, namely a start-stage and a non-identical end-stage. This seems problematic. It does not seem possible that a man could stand at one instant at one end of Central Park and then be at the other end, at the next instant, without moving through space, and thus undergoing a period of transition. The absurdity in this is not only that he would be travelling faster than the speed of light. Rather, there seems a conceptual impossibility involved in the suggestion: change requires a process, a beginning,

middle, and an end. First a fence is white, then is it being painted grey, and finally it is grey. Should the process be regarded as composed of discrete instants piled one on top of the other or as continuous, so that every moment of the change is itself a part of the process, no matter how finely we divide the time slices? Aristotle supposes that time is continuous;[17] hence, processes temporally divided are themselves infinitely divisible. Indeed, change is itself continuous and so infinitely divisible (*Phys.* 200b16–20).

Aristotle recognizes for this and other reasons that the natural philosopher will need to reflect upon the infinite. Beyond the fact that change itself implicates him in reflecting on the nature of the infinite, it is also true, observes Aristotle, that the natural philosophers who came before him were preoccupied with the infinite. That they should be so inclined makes good sense, he thinks. We need only gaze up into the heavens to wonder whether the universe is infinite in space; from there it is a small step to wonder whether it could be spatially infinite, whether, that is, the notion of spatial infinity is coherent. Much the same applies to time. Looking back in time, we seem quickly perplexed by two conflicting intuitions.[18] On the one hand, we have difficulty imagining the universe extending infinitely backwards in time, for if we do, we seem constrained to acknowledge the possibility of a being who is capable of counting backwards from infinity and of completing his task by reaching zero just before beginning his coffee break. On the other hand, it is difficult to be sanguine about the suggestion that the universe just began one day, popping into existence *ex nihilo* and without cause. Assurances that it all started off in a powerful explosion of energy do little to allay such concerns unless they carry with them complex and initially counterintuitive explanations of space, time, and the infinite. So, here too the infinite is perplexing. As Aristotle suggests, 'An inquiry into the infinite contains a problem: many impossibilities accrue for those who suppose that it does not exist – and also for those who suppose that it does' (*Phys.* 203b30–32).

In addition to the continuous nature of change, Aristotle cites five reasons for investigating the infinite (*Phys.* 203b15–30): (i)

time seems infinite both in extent and in divisibility; (ii) magnitudes seem infinitely divisible; (iii) it seems that generation and destruction are endless, which in turn seems possible only on the assumption that there is an infinite source for them to draw upon; (iv) if the universe is limited in space, there seems something beyond its limits, if not, the universe itself is infinite; and (v) our powers of imagination extend to the infinite, so that, for example, for any number n, we can conceive a number, $n + 1$, without end. Any reason to suppose that we would bump up against a conceptual limit here is arbitrary: we could go on, with time and energy enough, infinitely. To be sure, Aristotle does not himself endorse all of these theses;[19] but he credits his predecessors with having such motivations on reasonable, if not ultimately defensible, grounds.

Aristotle is concerned to show that while we cannot make sense of an infinite body, which is the matter most immediately of concern to the natural philosopher, we cannot simply dispense with the infinite altogether. To begin, there is the fifth of his five reasons for investigating the infinite: in iterative infinities we can always add one. So, for instance, in the case of numbers, we can always add one and move to the next highest number without end. In the other direction, a line segment, though finite, is infinitely divisible: for any point in a line, there is a point between them. Finally, time seems infinite in both senses: like a line segment, time is continuous and so infinitely divisible, but also without beginning or end, and hence, apparently, infinite in extent.

Unfortunately, some of what Aristotle holds about the infinite resists easy interpretation. That said, two central elements of his account are reasonably clear. First, he thinks that we must distinguish two notions of the infinite: (i) what is infinite by addition, something like a growing hill of beans which can never reach the infinite by addition of another bean; and (ii) what is infinitely divisible, like a line segment, or any continuous quantity, which can be divided without end into smaller segments of the same sort. Second, he applies a distinction from his hylomorphism which he thinks has a special role to play in analysing the infinite: the actual and the potential.[20] Armed with these two elements, he suggests that space, while not actually infinite in extent, is infinitely

divisible. Still, it is wrong to suppose that a continuous quantity is *actually* infinite, that the iterated division of a line into ever smaller line segments ever reaches its completion. So, a line is *potentially* infinite; and that, suggests Aristotle, is all the infinity required by either the mathematician or the natural philosopher.

That is debatable, especially given the subsequent history of the subject. Be that as it may, one is inclined to wonder, even at this early stage, whether the natural philosopher should or should not conclude that there is an infinite. In one way, Aristotle's response is characteristic of him. He seems to maintain that there both is and is not an infinite. There is no actual infinite, in either extent or divisibility.[21] Still, the processes of adding and dividing can go on without end; so, the potentially infinite does exist. No such potential infinity will ever be made wholly actual by a process of division or addition, whether intellectual or physical.

So much, of course, provides only a framework for investigating Aristotle's approach to the infinite. It will suit our purposes to see how well it fares when he applies it to other phenomena puzzling to the natural philosopher.

5.3 TIME

It is natural to say, as we have said, that changes, being processes, *take time*. What, though, is time that it may be taken? Time is present to us, unmistakably experienced, flowing forward, irrecoverable when past. Yet it is elusive and impenetrably opaque. Here too we know *that it is*, but fall into a conundrum when we first seek to explain *what it is*.[22] In late antiquity, the philosopher Augustine put the matter with an admirable and engaging candour:

> For what is time? Who can easily and briefly explain it? Who can even comprehend it in thought or put the answer into words? Yet is it not true that in conversation we refer to nothing more familiarly or knowingly than time? And surely we understand it when we speak of it; we understand it also when we hear another speak of it. What, then, is time? If no one asks me, I know what it is. If I wish to explain it to him who asks me, I do not know.[23]

As Augustine suggests, time is oddly at once immediately present to consciousness and stubbornly resistant to analysis. If that is doubted, then it should be a simple matter to complete this definition:

- Time $=_{df}$?

Anyone who has ventured a definition will appreciate that the task is non-trivial.

Augustine is motivated to inquire into time partly because of his acceptance of Christianity. He wishes to know how God might be related to the temporal, how, for instance, God might have existed *before* the creation of time. As he observes, there was no *then* then.[24] He is rightly nonplussed, and also duly disparaging of those who would answer the question of what God might have been doing before the creation of the earth by warning, 'He was preparing hell for those who pry too deeply.'[25] Augustine prefers to allow with all frankness that he does not know; and he sees little reason to defer to those who would meet his question with a self-masking cautionary dismissal. Of course, though his Christianity is well posterior to Aristotle, Augustine's query about time and eternity, along with his additional non-theistically motivated concerns about the puzzling nature of temporality,[26] are of a piece with Aristotle's concerns. So too is his resolute determination to ascertain the nature of time.

Aristotle considers a number of puzzles about time. He begins his discussion with one such:

> The next thing to discuss is time. It is best first to run through the puzzles concerning it, including the more widespread ones. First, is time among the things which exist or not? Then, what is its nature?
>
> The following considerations might incline one to suspect that time does not exist, or that it exists faintly and obscurely.
>
> (1) Part of time has been and is not, while another is going to be and is not yet. But time – regarded either as infinite or in

terms of any segment selected – is composed of these. Yet it would seem impossible for something composed of what is not to have any share of being.

(2) Moreover, if something has parts, then whenever it is, so too must its parts be, presumably all of them or at least some of them. Yet time has parts, and some have been and others are going to be, but none *is*. For the 'now' is not a part, for the part is a measure of the whole, which must be composed of parts; and time does not seem to be composed of 'nows'.

(3) Further, regarding the 'now': it seems to divide the past and future and yet it is difficult to see whether it (i) remains always one and the same, or (ii) is on one occasion one thing and on another occasion something else. For (ii) if we have different 'nows' on different occasions, and one part of time is never simultaneous with another (unless one includes one time surrounding another which is surrounded, as a shorter time is surrounded by a longer), and if what is not now though previously was must have perished at some point, then the 'nows' will not be simultaneous with one another and it will always be the case that the previous 'nows' have perished. Yet the prior 'now' could not have perished in its own instant, since it was then; nor could a previous 'now' perish in a later 'now'. Let it further be agreed that 'nows' cannot be next to one another, just as one point cannot be next to another point. If, then, a previous 'now' has not perished in the next 'now' but in some later 'now', it will be simultaneous with those 'nows' in between, which are infinite in number; but that is impossible. Yet (i) nor can the 'now' remain always the same. For it is not the case that there is just one limit for whatever is divided and finite, whether it is continuous in one dimension or more than one. But the 'now' is a limit, and one can grasp the notion of a limited segment of time. Further, if being simultaneous in time means being neither before nor after, but rather being in one and the same 'now', and earlier and later things are in some one 'now' [since all 'nows' are the same], then what happened ten thousand years ago is simul-

> taneous with what is happening today – and nothing is ever before or after anything else.
>
> (*Phys*. 217b29–218a30)

When he asks whether time is 'among the things which exist', Aristotle is again speaking in the language of his categories.[27] If time is real, then we would expect it to find a home in that scheme. Accordingly, Aristotle will also want to determine the categorial home for time. At the beginning of the day, however, time seems to exist only 'obscurely'.

This passage initiates a series of aporetic arguments for the unreality of time.[28] The first, an Argument from the Non-existence of the Past and Future (**NPF**) is:

1 If time exists, then it has as components the past and the future.
2 Necessarily, *x* has *y* and *z* as components only if *y* and *z* exist.
3 The past and future do not exist.
4 Hence, time does not have the past and future as components.
5 Hence, time does not exist.

The argument is clear enough. (**NPF**-1) simply offers an observation about time, to the effect that time comprises not just the present, but the future and past as well. (**NPF**-2) is plausible, at least on the further assumption that the components of a whole are understood to be what might be called *recoverable components*. That is, one might object that cakes contain eggs as components, but that in some sense the eggs no longer exist when the cake is baked. Hence, though they are genuinely components of the cake, the eggs are not recoverable components. (If someone wanting to make an omelette were to ask if there are any eggs in the house, she would not be helped by the answer, 'Only the two in your birthday cake'.) By contrast, a collection of seventeen porcelain figurines exists only if each of the seventeen figurines individually exists. Are the past and future recoverable components? If the answer is not immediately obvious, this is only because time exists obscurely.

Indeed, any such question leads us directly to a consideration (**NPF**-3). Plainly, one wants to respond, the past and future do not *now* exist. The past *did* exist and the future *will* exist. In fact, one contemporary school of thinking about time, *presentism*, holds just this: only the present exists, while the past and future do not.[29] Notice, however, that in denying (**NPF**-3), the presentist also seems committed to denying (**NPF**-1), since as it stands this premise presupposes that if it exists at all, time exists not only for the duration of the current *now* but comprises also the past and future. That seems unavailable to the presentist, who rejects the existence of the past and future. If (**NPF**-1) is denied, however, then we begin to lose our grip on *what time is*. For one might have thought to respond to our initial question concerning the nature of time by asserting, quite simply:

- Time $=_{df}$ the past, present, and future.

Now we are told that time does not include the past or the future, for they do not exist; only the present exists. To many, presentism purchases an account of time only at the cost of sacrificing the phenomena.

The presentist has much more to say here, of course. Aristotle does not, however, pursue this issue further. Instead, he raises a different sort of puzzle, which though of special concern to the presentist also affects anyone who accepts – as we nearly all do – the existence of the present. He does so by moving directly to a second aporetic argument intended to address someone fixated on the reality of the present. The present, he suggests, imparts difficulties of its own. For we should not be sanguine, contends Aristotle, about even the reality of the present (*Phys.* 218a8–30).

His aporetic argument for the Difficulty of the Present (**DP**) is:

1 If the present exists, it divides the past and the future.
2 If the present divides the past and the future, then in doing so it either: (a) remains forever the same; or (b) is forever changing.

3 If (2b), and the present is forever changing, and no two present instants, p_1 and p_2, exist simultaneously, then p_1 must have ceased to exist before p_2 came to exist.
4 If p_1 ceased to exist, then it did so either: (a) at the very instant it itself existed; or (b) at some later instant after it existed.
5 Not (4a): p_1 could not have ceased to exist at the very instant it existed, for it existed only at that very instant, and could not have both existed and ceased to exist at one and the same instant.
6 Not (4b): p_1 could not have ceased to exist at the next instant after it existed, since there is no next instant (any more than a point on a line has a point directly next to it); nor could it have ceased to exist at some still later instant, since then it would have existed simultaneously with all the intervening instants, which are both distinct from one another and infinite in number.
7 Hence, p_1 could not have ceased to exist.
8 Hence, not (2b): the present is not forever changing.
9 If (2a), and the present remains forever the same, then since for two times t_1 and t_2 to be simultaneous is for t_1 and t_2 to exist at the same instant, what happened 10,000 years ago is simultaneous with what is happening today.
10 That is plainly false: today's events are happening later than those which happened 10,000 years ago and so are not simultaneous with them.
11 Hence, not (2a): the present cannot be forever the same.
12 Hence, the present does not divide the past and the future.
13 Hence, the present does not exist.

Although the argument is fairly complicated, its purport is clear. The present – which is, if anything, what is known most immediately to us in time – is itself obscure. After all, it is natural to define the present as what divides the past and the future. If that is so, however, then the present is something always the same or something always changing. Neither alternative leads to an immediately happy result.

One noteworthy feature of this argument is its commitment to the continuity of time. (**DP**-6) denies that any given instant of time has another instant immediately next to it: moments of time are like points on a line. There are no time atoms from which a timeline can be built by aggregation. Aristotle will himself endorse this consequence, though he expects that it will need to be correctly understood.

Of course, one may want to press against this commitment, and there are several places a presentist might wish to attack (**DP**). That is fair enough, and to be expected. To be sure, Aristotle introduces this argument not because he endorses its conclusion: he himself accepts the reality of the present and of time more generally. Rather, (**DP**) is expressly introduced as an aporetic argument, an argument intended to raise a legitimate puzzle, one which will help focus our attention on potential trouble spots, so that we may avoid them in our own account.

Aristotle seeks to do just that when he turns to his positive account of time. In his view, as suggested, we should follow the argument's pointer in one crucial place: time is continuous, because time involves change, and change is continuous (*Phys.* 219a10–15). Indeed, the length of a time answers directly to the length of a change. Before we have an answer to the question of what time is, we seem able to say, for instance, that the time it takes to travel from Paris to Chartres corresponds directly to a change in place. The change is, as we have seen, continuous; so, time is itself continuous, and deeply connected to processes of change. It is this connection which Aristotle seeks to highlight and exploit in his own analysis of time, his first approach to which is: 'Time is not change, but that in respect of which change is numerable' (*Phys.* 219b2–3). By this, Aristotle means that though time is change-involving, we should not think that time simply *is* change. To begin, there is but one time, but myriad changes. Moreover, a change may be faster or slower, whereas time is constant. Indeed, says Aristotle, the fast and the slow are defined by appeal to time, and not the other way around. What is fast is precisely what moves a long distance in a short time, and what is slow the converse (*Phys.* 218b15–20, 220b1–5). So, although we

are in the neighbourhood of an account of time when we appeal to change, we are not yet home. Something more is needed.

Aristotle contends that what more is needed is a correct understanding of *now*, *before*, and *after*. As a psychological matter, we notice time's passing when we experience change. Moreover, we mark changes by a *before* and *after*: before the fence was white, but after it is painted it is grey; before she was in Paris, and thereafter she is in Chartres; and so on. What is the *now*? The now is simply the instant which serves as the *boundary* between the before and after, just as a point serves as the boundary of a line segment (*Phys.* 221a9–13). The similarity pushes further still: as no line is composed of points, no stretch of time is composed of instances, or 'nows' as Aristotle calls them. Still, along a line segment it is possible to speak of a point as nearer to one terminus and further from the other, and one might measure distances on a line by appeal to points identifiable along its course. In this sense, the points measure or number the distances of a line. In short, a line has a measurable quantity, namely its length. When we speak of the length of a line, we are speaking really only of a measurable distance between two of its points. So too along a timeline: time measures motion or is the number of motion, in the sense that time provides a quantifiable way of measuring, or numbering, motion. Thus, Aristotle advances the following definition of time:

- time $=_{df}$ the measure of motion in respect of the before and after (*Phys.* 219b1–2).

Since it numbers something continuous, time is itself continuous, that is, divisible into infinitely smaller segments of time. Here again, the parallel with line segments is instructive. A time belongs to a change just as a length belongs to a line. Each is a numerable quantity, infinitely divisible, between two boundaries. The length of a line is the distance between a point here and a point there; the time of a change is the distance between a now before and a now after.

So, to return to our opening query: does time exist? Aristotle maintains forcefully that time does exist. Time exists, though it is

not what some might suppose it to be. To appreciate what, precisely, Aristotle takes time to be, it is instructive to return to his initial aporetic arguments.

Aristotle's analysis so far, even if correct, establishes the reality of time without resolving the puzzles with which we began. Hence, it is incumbent upon him to resolve those arguments intended to show that time is incoherent or otherwise obscure. If we wish to understand Aristotle's final attitude towards these arguments, it is necessary for us to attend more fully to the consequences he derives for time from features of his theory of categories.[30] The bare existence of time, one may agree, is consistent with its belonging to any of a number of different categories of being. If we grant this much, however, it becomes possible to appreciate Aristotle's dominant attitude to the aporetic arguments which threaten the existence of time. His dominant thought is that time may exist without existing *independently*: it does not exist as an absolute framework within which change may or may not take place. Time is not a substance; nor time does not subsist, waiting for changes to take place within the framework it provides. On the contrary, according to Aristotle, time does not exist without change. Time is, rather, a quantity, a being in the category of quantity. Hence, time is always a quantity *of* something: time is, namely, a quantity of change.

To see exactly why this should be so, recall that time belongs to change as length belongs to line. There are lengths – but they are always lengths *of* lines. Lengths do not loll about, waiting for a line to come along and occupy them. So too there is no time waiting about for change to occur. Rather, a time is a time *of* a change. Time is not a receptacle, waiting to be filled with changes: time is a measure belonging to change itself.

Needless to say, this definition is open to interpretation and development, and has been subjected to criticism.[31] Two obvious questions present themselves. First, we are able to speak of two stretches of time as being the same (each year takes *the same time*). This notion of time is familiar enough, but requires some sort of abstraction from Aristotle's defined notion, which ties each time to an individual change. Probably something can be done along

these lines, but it is a non-trivial matter, given Aristotle's conception of mathematical abstraction. More pressing, however, is a question pertaining to the dependency of time upon change forged by Aristotle. If time is a measure of change in respect of the before and after, then a necessary condition of there being time at all is the existence of change. A question of adequacy thus presents itself: is time not *possible* without change? If so, then Aristotle's definition fails;[32] if not, then its seeming possibility requires some explanation.

However these issues may be developed, we have now before us the backbone of Aristotle's natural philosophy. The study of nature requires an analysis of change, which is defined by Aristotle in hylomorphic terms. Once we have an account of change, we appreciate that it is continuous. Since the continuous is infinitely divisible into ever smaller quantities of the whole, when considering change the natural philosopher must attend as well to the infinite, and thence to another continuous quantity, time.

5.4 ZENO'S PARADOXES OF MOTION

One way to assess the adequacy of Aristotle's account of time is to confront it directly by subjecting it to critical scrutiny. Another approach, less direct but no less fruitful, involves an examination of its efficacy. That is, we worry about time in part, as Augustine saw, because it is strange in its ordinariness. We do not reflect on our familiar conception of time very much before puzzles inherent just below its surface emerge. One set of puzzles, well known to Aristotle, involves not only time, but motion, or change in place, as well. These are Zeno's paradoxes of motion.

Zeno's paradoxes are formidable – so formidable, in fact, that many think that not only did Aristotle fail to solve them, but that their adequate resolution, if indeed they admit of a perfectly satisfactory resolution, had to await the technical developments of the twentieth century, some two millennia after Aristotle first had encountered them.[33] Here our interest in Zeno's paradoxes will be limited to Aristotle's solution of Zeno's most elementary paradox only. The success of Aristotle's approach has been debated, some

regarding his solution as ineffectual and others viewing it in a much more positive light. In any event, it merits consideration. Minimally, such a consideration will help bring into sharper relief the rather abstract accounts of time and change thus far introduced. I will suggest that Aristotle's response to this simple puzzle is in fact effective. Even if that is correct, however, it must be appreciated that there are descendants of this same puzzle which may outrun the Aristotelian solution.

Zeno (born c. 490) was believed in antiquity to be a student of Parmenides. Although an actual teacher–pupil relation between them is hard to certify, the intellectual lineage makes good sense. Parmenides deployed a novel, surprisingly forceful argument intended to prove the unreality of change. His argument traded upon some controversial theses about reference, thinking, mental content, and predication. Although the argument fails, it did in fact help bring to light some crucial distinctions among kinds of predication and conceptions of thinking; indeed Parmenides' argument helped motivate Aristotle's own basic hylomorphic framework.[34] It is natural and probably historically accurate to regard Zeno as undertaking to offer new arguments for an old conclusion, namely Parmenides' contention that change is impossible. This, in any event, is how they were understood in Plato's Academy (*Parm.* 128c); it is reasonable to assume that Aristotle shared this understanding.

Interestingly, Aristotle struggles more with Zeno than he does with Parmenides, at least where the details of their various arguments are concerned. This is as it should be. If hylomorphism is adequate to the task of disarming Parmenides, it is not also obviously so when it comes to confront Zeno's paradoxes of motion. For Zeno's arguments do not rely upon the controversial theses accepted by Parmenides. Rather, and strikingly, they are motivated by a combination of theses each of which, taken individually, is so attractive as to command our uncontroversial assent. Here it is salutary to compare the two figures (*Phys.* 239b11–13):

> Parmenides: 'The same thing is there for thinking of and for being . . . It is the same thing, to think of something and to think

> that it is, since you will never find thought without what-is, to which it refers, and on which it depends. For nothing is nor will be except what-is, since it was just this that Fate did shackle to be whole and unchanging; wherefore it has been named all things that mortals have established, persuaded that they are true: "to come-to-be and to perish", "to be and not to be" and "to shift place and exchange bright colour".'
>
> Zeno: 'Motion is impossible, because an object in motion must reach the half-way point before it gets to the end.'

It is not that Parmenides fails to produce a plausible argument. He does. It is rather that his argument contains premises bound to seem idiosyncratic when unearthed. Zeno, by contrast, appeals only to what is manifest. This is why it is appropriate to treat Zeno's arguments as *paradoxes*. They present us with an implication we find incredible by relying exclusively on premises we find difficult, if not impossible, to reject.

Aristotle, our main source for Zeno's paradoxes, relates four distinct paradoxes of motion.[35] We will consider just one, *The Racecourse*, which is also sometimes called *The Dichotomy*.

The Racecourse relies on two simple thoughts, each highly intuitive: (i) before I go anywhere, I must go half way there; and (ii) traversing any distance, no matter how small, takes some amount of time. Slightly more formally, (i) holds that whenever S traverses some distance D, then before reaching the destination, S must first traverse ½ (D). Apparently, this process of division can go on to infinity. That is, distances are *continua*: they may be divided infinitely into ever smaller distances, each one of which is itself a distance. There are no minimal distances; there are no distance atoms. The distance 1/32 (D) is a distance, as is the distance 1/64 (D), and so on. For no number *n* will it be right to say that 1/*n* (D) is the shortest distance. Interestingly, for the purposes of our investigation, Aristotle himself plainly endorses this conception of distance. Indeed, it is central to his very analysis of change that it be continuous in just this sense.[36]

The second assumption (ii) is simply that travel takes time. We are not now here, on one side of the room, and then there, on the

other side of the room, with no time elapsing in between. Indeed, if travel took no time, why could we not be here and there and back here again, all within the same instant?

Armed with just these two irresistible thoughts, Zeno thinks he can show that motion is impossible. His idea is demonically simple: if motion is possible, then plainly you can walk across the room right now; before you do that, however, you must first walk half-way across. Of course, by repeated application of (i), for any distance specified, before you traverse that distance, you must first travel half-way across that distance. Since applications of (i) never admit a stopping point, you are always in the position of needing to traverse ½ D before traversing D. Now, this is a pity, since (ii) tells us that it will take some time to manage that feat. Because there are an infinite number of distances to traverse between here and the other side of the room, it will take an infinite amount of time for you to make your way there. It follows, then, that you can never arrive anywhere, since you do not have an infinite amount of time to burn. If you can never arrive anywhere, then motion, contrary to the evidence of your lying senses, is impossible.

To appreciate the force of Zeno's argument, it is worth being a bit more precise than is possible within the confines of our informal presentation. Let **R** be a normal healthy runner poised to run around a normal, unobstructed racecourse. For the sake of clarity, we may use the following simple definitions:

- Let $\mathbf{S^0}$ be the starting line and **F** be the finishing line.
- Let $\mathbf{S^1}$ = the half-way point between $\mathbf{S^0}$ and **F**, $\mathbf{S^2}$ be the half-way point between $\mathbf{S^0}$ and $\mathbf{S^1}$, $\mathbf{S^3}$ the half way point between $\mathbf{S^0}$ and $\mathbf{S^2}$ – and so on for any **n**, let $\mathbf{S^n}$ be the half-way point between **S** and $\mathbf{S^{n-1}}$.

Using those abbreviations, Zeno's Racecourse (**ZR**) holds:

1 If motion is possible, then it is in principle possible for **R** to traverse the distance of the racecourse, that is, from $\mathbf{S^0}$ to **F**, in a finite amount of time.

2 In order to traverse the distance from $\mathbf{S^0}$ to **F**, **S** must traverse an infinite number of distances (namely the distances $\mathbf{S^0}$-S^1, and before that $\mathbf{S^0}$-S^2, and before that $\mathbf{S^0}$-S^3, and before that $\mathbf{S^0}$-S^n . . .).[37]
3 It is impossible for **R** to traverse an infinite number of distances in a finite amount of time.
4 Hence, it is not even in principle possible for **R** to traverse the distance of a racecourse.
5 Hence, motion is impossible.

It is noteworthy that in the long history of this argument, its detractors have taken up a bewildering variety of strategies, with some even recently denying (**ZR**-2) by appeal to quantized space, that is, by denying that space is continuous. As we have seen, that alternative is not open to Aristotle, since he treats space as continuous, and hence as infinitely divisible. The history of mathematics affords a string of different ways of attacking both (**ZR**-2) and (**ZR**-3), at various periods involving infinitesimals and converging series. It is a tribute to the fecundity of this argument that simple variations upon it yield ever new twists and puzzles, not all of which appeal, as those given by Aristotle's Zeno appeal, to the problem of executing an infinite number of tasks in a finite time. Indeed, some newer formulations of the argument, although direct descendants of Zeno's version, might seem utterly alien to Aristotle and Zeno alike.

Be that as it may, as becomes evident in his proposed solution, Aristotle himself understands the argument in roughly the form given. He takes aim at (**ZR**-3): 'Zeno's argument makes a false assumption when it contends that it is impossible to traverse an infinite number of positions or to make an infinite number of contacts each after the other in a finite time' (*Phys.* 233a21–23). Aristotle draws upon his treatment of the infinite in this response. We have seen that the infinite may occur either in *extent* or by *divisibility*.[38] Thus, Aristotle in effect responds to Zeno by drawing a simple distinction. He observes that if the distances are infinitely divisible, because they are continua, then so too are the relevant times; for time is continuous no less than distance. Hence, it

would be incorrect to hold that the time is finite *while the distance is infinite*. For that is to treat the time as finite *in extension* and the distance as infinite *by divisibility*. It is possible, suggests Aristotle, to make an infinite number of runs in a finite amount of time, because in the sense in which there are an infinite number of runs, by division, there is also an infinite amount of time to be had, again by division, even though that same time is indeed finite, that is, *in extension* – but then so too is the distance. The distances and times in question are equally *finite* in extension, though because they are both continua, they are also at the same time equally *infinite* by division. It is illicit to mix and match infinities.

Aristotle's treatment of Zeno's Racecourse provides some flavour of the manner in which he is prepared to deploy his dominant tools in natural philosophy. The puzzles which arise for physics, he thinks, are all at root puzzles about change. They are inevitably also, then, puzzles about time, the continuous, and the infinite. All three notions intersect in a formidable challenge in the form of Zeno's paradoxes of motion. As the long history of these paradoxes attests, however successful Aristotle's response may or may not be, he does engage the central elements subsequently developed in the intricate dialectic instigated by Zeno's simple gambit.

5.5 THE UNMOVED MOVER

We suppose, then, against Zeno and Parmenides, that motion is possible. Indeed, trivially, since motion is actual, it is possible. It is appropriate, then, that the natural scientist does not set about proving the existence of motion, and instead takes its existence for granted. The natural scientist, who deals with the realm of motion and change, does, however, need to *explain* motion. As we have seen, the natural scientist advances an account of motion within the terms given by Aristotle's four-causal account of explanatory adequacy.[39] Any genuine instance of change requires two factors: first, something capable of changing along some categorically determined dimension or other, and second, something capable of initiating the change. Thus, for example, in order for some-

thing to become white, there must first be an entity with a surface capable of being made white and then also something capable of making it so. Now, the bare presence of some white paint and a grey fence do not make a white fence: something must actualize the potentiality inherent in the fence. The fence does not simply spontaneously actualize its own potentiality. Rather, only something actual can bring it about that something which is potentially *F* comes to be actually *F*.[40]

The demand that only something actual initiate a change seems intuitively compelling. While a forest can be caused to burn, it does not actually burn until such time as something actually ignites it. Further, when thinking not of bare possibility but of Aristotelian potentiality,[41] nothing which is potentially *F*, say potentially burning, comes to be actually *F*, actually burning, without the effective presence of an actual agent – in the case of fire unless some actually existing fire or other causally sufficient factors bring it about that something combustible is ignited. This is one sense in which Aristotle insists upon the priority of actuality over potentiality (*Meta*. 1049b1–1050a4, 1071b12–1072a18).

Reflecting again on Aristotle's definition of change, we will accordingly be unsurprised to find his commitment to the priority of actuality emphasized there.[42] Recall his definition: change is the *actualization* of what is potentially *F* insofar as it is potentially *F*. If we further focus exclusively on the presence of this feature of Aristotle's definition, we can begin to appreciate why he thinks that the ultimate explanation of all change, which falls within the provenance of the natural scientist, requires a truly extraordinary hypothesis. Given the requirement that every change be effected by something actual, Aristotle supposes that he can demonstrate a startling claim about the universe, namely that there is an everlasting unmoved mover which is without parts or magnitude and which is responsible, ultimately, if remotely, for the motion we indisputably observe with our senses.

Even if we accept Aristotle's analysis of change without reservation, this striking conclusion is obviously a long way from the humble observation that there is change. So, Aristotle owes us a rather ambitious argument. He thinks he can deliver such an

argument, and attempts to do so throughout the whole of the last book of the *Physics*. His argument proves to be the first full formulation of a *cosmological argument*, an argument purporting to show that ultimately the only explanation for the existence of change, which we take for granted as something we undeniably experience, is the existence of an unmoved mover.

In general, the argument holds that since there is motion, and everything which is moved is moved by something or other than itself, either the chain of movers carries on infinitely or it comes to an end. It cannot go on infinitely, and hence must come to an end; this final mover must either move itself or be altogether unmoved. It cannot move itself; hence, there must be an unmoved mover. This ultimate mover must be, because forever responsible for the unceasing motion of the universe, itself infinite in time, and also, because unlimited in power, either an infinite magnitude, which is impossible, or not a magnitude at all. Hence, concludes Aristotle, there is an everlasting unmoved mover which moves other things without being itself a magnitude but which is nevertheless the ultimate source for all motion observed in the universe.

It is unsurprising that later, Christian writers appropriated and adapted this argument in order to attempt an Aristotelian-based argument for the existence of God.[43] Indeed, Aristotle himself deploys a version of it in his own *Metaphysics* xii 6–7 on behalf of a god who is, however, remote in different ways both from the God of the Christians and from the gods recognized by the popular religions contemporary to Aristotle.

In the *Physics*, however, Aristotle makes no mention of a god, urging instead only that there is an *unmoved mover*. His argument is complex and in some ways convoluted in its details. Still, it is possible to extract a general argument which forms the backbone of his case for the existence of an *unmoved mover* (**UMM**).

1 Something is in motion.
2 If something is in motion, then it is moved by another.
3 Whatever is moved by another, is either: (i) moved by something which is itself moved by another, or (ii) by something which is not moved by another.

4 If (3.ii), then there exists an unmoved mover.
5 If (3.i), then either: (a) the chain carries on to infinity, or (b) or it ends, in which case we arrive at an unmoved mover.
6 It is not possible that the chain carry on to infinity.
7 Hence, if (3.i), we arrive at an unmoved mover.
8 Hence, if something is in motion, there exists an unmoved mover (3, 4, 7).
9 Hence, there is an unmoved mover (1, 8).

This argument has been roundly criticized. Some of its critics have misunderstood its terms; others have understood them perfectly well. In order to avoid impotent criticisms rooted in misunderstanding, it is first of all necessary to understand the key claims of (**UMM**).

Towards this end, it is helpful to reflect upon a point of Aristotle's Greek. He can mark by grammar what we in English discriminate only by context or diction. Sometimes, we use the verb 'move' transitively ('Each morning a large snowplough moves the night's accumulated snow off the main thoroughfares'); and sometimes we use it intransitively ('Mikhail Baryshnikov moves with greater graceful athleticism than any other dancer in the history of ballet'). The transitive use of 'move', move_T, takes an object; it involves *x* imparting motion to some *y*. The intransitive use of 'move', move_I, does not involve something's causing anything to move, but signifies that something is *in motion*. Thus, (**UMM**-1) captures the claim that something moves_I by claiming that something is *in motion*.

Now, with that much in place, we can avoid a common but elementary mistake made by facile critics of (**UMM**): the claim that there exists an unmoved mover is *not* the claim that there exists something which is in motion without being caused to be in motion. That is, Aristotle is manifestly not concluding in (**UMM**-9) something in violation of the impetus of the entire argument, which is given in (**UMM**-2), that whatever is in motion is moved by another. For the unmoved mover is not in motion. Put in our terms, the unmoved mover is a mover_T though it is not a mover_I.

How, one might reasonably demand, can something move_T something else without itself being in motion? After all, one billiard ball does not cause another to move without itself being in motion. The demand is a fair one, and we will return to it below, but for now, in service of understanding the argument before criticizing it, perhaps it will suffice to point out that we do sometimes find it natural to speak of beings which are not in motion as causing others to move. Thus, for example, we say that Goya's painting 'Execution of the Defenders of Madrid, 3rd May 1808' moves many of its viewers to tears. It is not, however, in motion; it is hanging quietly, motionless on the wall in the *Museo del Prado*. We also say that the mere prospect *that Santa would soon be there* caused the children to shriek with delight. Perhaps we are not sure when we speak this way what 'prospects' are, but whatever they are, they do not seem to be in motion in any obvious way. Then again, we say that the likelihood of a downturn in the market moved the broker to pursue a more conservative investment strategy than was his custom. Of course, one might want to paraphrase these sorts of claims in an effort to translate them into idioms which do not ascribe the power to move to what is itself unmoving. The drive to do so, however, would presumably derive from the antecedent conviction that there cannot be movers which are not in motion. So far, however, we have been given no motive to pursue such a course of paraphrase. So far, indeed, unless we are in the throes of some theory or other, it seems perfectly acceptable to suggest that it is *the painting* which moves its viewers to tears. In any event, all we have wanted to appreciate so far is that something *might* cause motion without being itself in motion. Such would be an unmoved mover in the sense of (**UMM**-9).

Having thus dispatched a common but ineffectual criticism of (**UMM**), we can begin to assess the argument more fully. (**UMM**-2) is primarily an application of Aristotle's definition of change as the actualization of what is potentially *F* insofar as it is potentially *F*.[44] Now, (**UMM**-2) makes use of that definition by pointing out that if there is change, there is an actualizer of change. Note in this connection that Aristotle does not mean to deny in (**UMM**-2)

the existence of self-motion, properly understood. That is, if Smedley is walking across the quadrangle, then is he not moving under his own steam, and thus moved by himself and *not* by another? If so, this may seem a direct counterexample to (**UMM**-2). Aristotle's treatment of self-motion proves complex,[45] but in the present context it is only necessary to note that he insists that self-movers, including animals, move themselves only because one part of them moves another (*Phys.* 256b34–257a3, 257b6–258a21). If this is so, self-movers do not pose any threat to (**UMM**-2). Rather, anything in motion is caused to be in motion, because, as the definition of change implies, every motion requires an actualizer. Potential motions do not initiate their own actualizations.

Once it is placed in that context, (**UMM**-2) has at least whatever plausibility Aristotle's account of change bestows upon it. The next two premises raise no great difficulty. It is only when we reach the most crucial premise in the argument, the one which has been most stridently attacked, namely (**UMM**-6), that we encounter a serious problem. (**UMM**-6) is the claim that it is not possible for the chain of movers which move by being in motion to carry on doing so into infinity. It is at first natural to take this claim temporally; and on this interpretation, it seems just to dismiss (**UMM**-6). Suppose a bat hits a ball, causing it to careen across the field. Something, according to (**UMM**-2), caused the bat to move. Let us say that it was the arms of the sportsman. Something, of course, caused the sportsman's arms to move, and something in turn caused that motion and so on. Perhaps each mover was moved by a mover moving before it. Which was the first? Well, there was no first: the chain stretches back forever. There is no obvious incoherence in such a claim. Certainly, it contains no contradiction.

Before supposing that we can put the argument out of its misery, however, we ought to take note of a simple fact: Aristotle *does think* that the chain of movers and moved stretches back forever, infinitely in time. Moreover, he deploys an ingenious argument for this conclusion in *Metaphysics* xii 6 and 7 which draws upon his earlier introduction of the categories,[46] together

with his accounts of time and change from the *Physics*.[47] In that connection, he returns to his contention that substance is primary, in the sense that if there were no substances, nothing else would exist (see *Cat.* 2b5–6; cf. *Meta.* 1069a19–26). It follows, then, that if all substances are perishable, so too is everything else, in every other category of being. Time and change, however, cannot perish: time cannot come into being, for then there would be a time before time and a time after time, which is plainly preposterous. Time, however, is the measure of motion with respect to the before and after.[48] According to this definition, time is a quantity of motion; hence, when and only when there is motion, there is time. If time always was, however, then so too has there always been motion. Forever. So, there has always been motion.

More formally, Aristotle's argument for the Perpetuity of Motion (**PM**) is:

1 Entities in all categories of being other than substance depend upon substance for their existence.
2 If (1), then if substances are perishable (as a class), entities in all other categories of being must also be perishable.
3 Hence, if substances are perishable, then time, which is in the category of quantity, can perish.
4 If time can perish, then time can also come into being.
5 If time can come into being and perish, then it is possible that there was a time before time and that there will be a time after time.
6 That is absurd.
7 Hence, time cannot come into being and perish (4, 5, 6).
8 Time can come into being and perish if and only if change can come into being and perish.
9 Hence, change cannot come into being and perish (7, 8).
10 Hence, there always was and always will be change.

A critic of this argument might want to take aim at (**PM**-5); and, of course, her doing so would trigger an investigation into the nature of time, including an investigation into Aristotle's contention that time is a measure of motion. Our present point,

however, concerns the correctness of (**UMM**-6), the claim that a chain of movers cannot extend into infinity. (**PM**-10) shows us that in so speaking Aristotle cannot intend to suggest that no chain of movers can extend infinitely backwards *in time*. On the contrary, he insists that the chain of motion we are currently experiencing has neither a beginning nor an end in time.

If we grant that, however, we reach an interpretive conundrum. The reason, we have allowed, that most people read (**UMM**-6) *temporally* is simply that this is the most natural reading of Aristotle's claim. Once we set aside the natural reading of (**UMM**-6), it becomes unclear which unnatural reading we might wish to pursue. One thought, which we may only introduce in the present context, suggests that if the denial of endless chains of movers pertains not to temporal infinities, then perhaps it pertains to what one might call *vertical infinities*. The idea here would find its genesis in the same contention we found standing behind (**UMM**-2), the claim that if something is in motion, then it is moved by another, namely that only something actual brings something potentially *F* into a state of being actually *F*. Suppose, for example, that you are riding your bicycle, and just now turning around a corner. You do not first turn your handlebars and then, at a later time, cause your bicycle to turn. Rather the moving$_T$ of the handlebars and their being moved are simultaneous. In this way, the turning of your handlebars is not only a case of moving$_T$ but also a case of being moved. Presumably, the turning of your handlebars is caused by your moving your arms. So, your moving your arms is again both a moving$_T$ and, presumably, a case of being moved. Note, again, however, that the moving of your arms is simultaneous with the turning of your handlebars and the turning of the bicycle. These various movings and instances of being moved are not arrayed over time, but are, so to speak, stacked vertically one upon the other, at a time. Now, perhaps Aristotle is thinking of vertical infinities, since again, he *cannot* be thinking of temporal infinities. If so, his thought in (**UMM**-6) comes to this: a vertical chain of movers and motions cannot reach ever upwards. Why not? Eventually, there must be something, from the standpoint of motion, which is an actuality base.

That is, unless we reach actuality bedrock, we will never find a fulcrum upon which we can turn the potential into the actual.

To be sure, so much is speculative, and only a gesture in the direction of a full discussion of (**UMM**-6). Notice, however, that even if we are prepared to go so far, we have not yet approached anything like the single unmoved mover which is the ultimate ambition of *Physics* viii. We may, indeed, have reached at most a much humbler conclusion, that for every motion, there is an unmoved mover responsible for it, as the inception of the chain in which it is a link or a terminus. Thus, perhaps the unmoved mover in the case of the bicycle is nothing other than you yourself, in your decision to turn. If the goal of turning moves you to turn, then if your goal is not in motion, it will qualify as an unmoved mover in this local chain.

Two observations are in order. First, in view of this concern, Aristotle might attempt a two-stage argument, the first phase of which argues from the existence of a plurality of unmoved movers and the second of which proceeds to a grander argument for an ultimate single unmoved mover. Second, and more importantly, the character of the hypothesized local unmoved mover in the chain described proves to be in one way rather unglamorous: it is simply the goal envisaged. Still, the possibility of this sort of local unmoved mover highlights something significant about Aristotle's argument for the unmoved mover in the *Physics*. This is that even if it is completely successful, it leaves some facts about motion unexplained. Suppose, that is, as we are not yet entitled to do, that we come to accept the conclusion of (**UMM**-9), that there is an unmoved mover. Suppose, indeed, that we embrace the existence of a single and ultimate unmoved mover, an entity, we may add, which is without magnitude, which exists everlastingly, and which is ultimately responsible for the motion we undeniably experience in the universe about us. If it has no magnitude, then the unmoved mover cannot move anything by bumping into it. Indeed, since it is itself unmoving, the unmoved mover could not manage to push anything around. How, then, does the hypothesized unmoved mover move_{T} anything at all?

Aristotle does not answer this question in the *Physics*. For this, we must make a transition into first philosophy, or theology.[49] In *Metaphysics* xii, Aristotle offers a treatment of the unmoved mover which is both more personal and more philosophically overt than the treatment offered within the *Physics*. There, in fact, Aristotle characterizes the unmoved mover as divine, as god, a living being engaged in seamless and ceaseless intellectual activity (*Meta*. 1074b29–30). In that context we confront anew the question of how the unmoved mover can be understood to instigate motion, to move$_T$, without itself being in motion. Aristotle's answer is arresting in its brevity: 'the unmoved mover causes motion insofar as it is an object of love' (*Meta*. 1072b3–4).

5.6 CONCLUSIONS

Aristotle's *Physics* is not a textbook in physics. It is rather an exploration of puzzles about natural phenomena, conditioned by some a priori challenges to the intelligibility of our most familiar and unexceptionable experiences of change. These challenges assault the appearances of our lives: we certainly *seem* to experience change.[50] In the face of some surprisingly powerful arguments dedicated to proving the impossibility of change (or motion, *kinêsis*), Aristotle responds by deploying his hylomorphic analysis of change, extending to both its substantial and accidental varieties. In the process, he incurs some debts of his own: change, he argues, is continuous, and so infinitely divisible; change requires time; and all change requires some antecedently sufficient causal conditions. So, continues Aristotle, the natural philosopher must offer accounts of the infinite, of time, and of the most fundamental sources of the motion we experience. In discharging these encumbered debts, Aristotle advances detailed analyses of the nature of change in terms of the twin notions of actuality and potentiality, which in turn implicate him in a surprising and long-tailed argument for the existence of an ultimate actuality, an unmoved mover which he holds is ultimately responsible for the very existence of the change and motion so palpable in our daily lives.

Aristotle is right to contend that we cannot deny the existence of change; but it does not follow that his analysis of change is the one we must accept. In evaluating his approach, it is appropriate to consider not only the intrinsic merits of his account, but to observe its efficacy, or lack thereof, as it is dispatched in solutions to problems and puzzles cropping up in the domain of the changeable world. The problems and puzzles of the *Physics* pervade nature as a whole: centrally, but not exhaustively: change, time, and the infinite. We have seen, in a preliminary way, how well Aristotle's account of change fares in these contexts.

Opportunities to assess Aristotle's analysis of change do not dry up at the end of the *Physics*, however. For he reaches back to the principles of the *Physics* again and again in his further philosophical investigations, including most notably his explorations into living beings and their various psychological capacities and processes, though extending also, to a surprising extent, into metaphysical matters pitched at a comparatively abstract level of inquiry.

This is perhaps why, in his *Metaphysics*, he contends that if there were no separate substances, physics would be first philosophy (*Meta*. 1026a23–32). By this he means that if the changeable world exhausted all of nature, there would be no further subject for the philosopher to investigate. Already in the *Physics*, however, he has argued for the existence of an immutable, everlasting, first principle, a being whose complete actuality underpins and explains the motion we observe in our daily dealings. Because such a being would be a kind of *substance* (*ousia*), it follows that the metaphysician will want to investigate not only the nature of this being, but the nature of substance more generally. This broader investigation will embrace the kinds of natural substances falling within the purview of the natural scientist, but only insofar as they are subjects of motion. By contrast, contends Aristotle, the metaphysician will consider such beings at a much higher level of generality, not insofar as they move about the surface of the earth or through the heavens, but insofar as they qualify as beings in the first instance. Metaphysics, he will urge, studies beings *qua* beings – beings, that is, insofar as they are beings at all.

FURTHER READING (* = ESPECIALLY SUITED TO BEGINNERS, IN TERMS OF CLARITY OR ACCESSIBILITY)

Primary Sources

Aristotle, *Physics* i, ii, iii 1–3, iv 10–14, vi 1, viii; *De Generatione et Corruptione* i 1–5, ii 1–5, 10–11

Secondary Sources

Charlton, W., 'Aristotle's Potential Infinities', in L. Judson, ed., *Aristotle's Physics: A Collection of Essays* (Clarendon Press: 1991), pp. 129–49

Graham, Daniel, *Aristotle, Physics Book VIII*, translated with a commentary (Clarendon Press: 1999)

Hussey, Edward, *Aristotle, Physics Books III and IV*, translated with introduction and notes (Clarendon Press: 1993)

*Sorabji, R., *Time, Creation and the Continuum* (Duckworth: 1983), chs. 1, 6, 7, 14, 21

Williams, C. J. F., *Aristotle's De Generatione et Corruptione*, translated with notes (Clarendon Press: 1982)

Six

Substance and the Science of Being *qua* Being

6.1 ARISTOTLE'S METAPHYSICAL INTERESTS

Aristotle's *Metaphysics* contains his most mature and difficult inquiry into substance and being. The work begins on a now familiar, optimistic-sounding note: 'All human beings', proclaims Aristotle, 'by nature, desire to know' (*Meta*. 980a1).[1] He does not develop this contention in the beginning of the *Metaphysics*, but proceeds instead to sound a second common theme, that when seeking to know, human beings demand a special sort of account: knowledge seekers seek causal accounts which lay bare the real structure of the world,[2] thereby making what is more intelligible by nature also more intelligible to us (*Meta*. 982a1–3; *APo* 89b23–31).[3]

So far we are on familiar terrain. The *Metaphysics*, however, does not dally long in the land of the established. Instead, it proceeds to a host of highly abstract treatments of some of the most complex and demanding issues in metaphysics: substance, the science of being *qua* being, the principle of non-contradiction, actuality, potentiality, number, and divine being. Along the way, the work contains some surprises, or seeming surprises, for which Aristotle's arguments thus far cannot have prepared his readers. Three central surprises concern his treatments of the science of being *qua* being, his analysis of substance, and his defence of the principle of non-contradiction. Arguably – although in each case these contentions may be intelligently disputed – Aristotle's discussion of these topics is at variance with something he had held earlier. Even where it may be successfully argued that the

seeming variance conceals a deeper harmony, it remains true that many of Aristotle's discussions in the *Metaphysics* give the appearance of development and departure from his earlier treatments of the same topics. More importantly, however one is to resolve the intricate scholarly debates surrounding each of these issues (and here we will seek to indicate them without seeking to offer final resolutions),[4] Aristotle's discussions of these topics are inherently challenging and interesting in their own terms. We will consider each in turn.

6.2 ARISTOTLE'S WORK: THE *METAPHYSICS*

First, however, we should note that when we speak of the relation of the *Metaphysics* to Aristotle's earlier works, we are already making a somewhat unstable assumption, namely that there is a single, cohesive work written and presented by Aristotle as a finished treatise on a unified topic. The first and most obvious point to mention is that the title of this work does not derive from Aristotle. Nor in all likelihood does the title mean something in the neighbourhood of *Treatise on Metaphysics*. Aristotle did not himself use the word 'metaphysics' in anything like our sense; indeed, he did not use this term at all.[5] The title probably derives from Asclepius or another editor writing well after Aristotle's death. Aristotle himself seems to refer to the work as *Matters Pertaining to First Philosophy* (*ta peri tês prôtês philosophias*; *MA* 700b9). It came later to be called *After the Physics*, that is, in Greek, *Meta ta Phusika*, due either to the pedestrian fact that it followed the *Physics* in an early folio of Aristotle's complete works, or as a reflection of the more substantive judgment that its investigations were best studied only after the subject matter of the *Physics* had been mastered.

We do not know. Let us, though, pretend that the work received its title because it reflected Asclepius' judgment that the topics in this treatise are best investigated after having mastered the curriculum of the *Physics*. If that is so, Asclepius' judgment was sound. The *Metaphysics* is plainly a mature work in the sense that it deploys Aristotle's most intricate and technical machinery in the

service of some of the most demanding and fundamental problems in all of philosophy. In this work, Aristotle avails himself readily of his most sophisticated hylomorphism, in some cases straining the framework it provides almost beyond recognition.[6] In seeking to characterize substance and being, he deploys the notions of potentiality and actuality, of form and matter, of essence and accident, and he appeals to the apparatus of his general categorial framework. In the process, he produces some of his most nuanced and far-reaching abstract theorizing. Unsurprisingly, the work also contains some of the most exegetically contentious passages in the entire Aristotelian corpus.

6.3 A PUZZLE REMAINING FROM THE *PHYSICS*

As we have seen, when Aristotle tackles the puzzles of nature in the *Physics*, he makes free and effective use of his hylomorphism.[7] Indeed, the challenges to change authored by Parmenides and Zeno were met first with a fundamental distinction between form and matter, and then, as the puzzles grew more sophisticated and demanding, with the enhanced machinery of actual and potential infinities, which again found their roots in the continuous character of change also described by Aristotle in hylomorphic terms.[8] It is noteworthy that before addressing those more sophisticated puzzles, Aristotle pauses to register a concern, left unexplored in the *Physics*, regarding the consequences of hylomorphism for his theory of substance: he wonders whether he should think of matter or form as substance (*Phys*. 191a19–20). It is right that he should do so, since at the core of his theory in the *Categories*, Aristotle had offered as his star examples of primary substance individuals like Socrates. In that work, individuals emerged as primary substances in virtue of their satisfying a simple test: primary substances were neither said-of nor in;[9] and this was held to provide good reason for thinking of them as basic, as the sorts of beings upon which all other categories depend for their existence (*Cat*. 2b5–6).

Yet in the *Categories* Aristotle was completely silent on the question of Socrates' *internal structure*. This is odd, since in the terms established in the *Physics*, Socrates is not a metaphysical simple but

a hylomorphic compound: he is a complex of matter and some substantial form.[10] Aristotle was similarly silent on his attitude concerning what must be regarded as some fairly obvious challenges to his commitment to his preferred candidates for primary substance in the *Categories*. For example, as Aristotle was aware, there were natural philosophers before his day committed to an austere kind of eliminativism: according to Democritus, for example, the basic entities – or, evidently, the *only* entities – in the universe are not macroscopic animals like Socrates or a house on a hill, but rather atoms and the void: 'By convention, sweet, by convention, bitter; by convention, hot, by convention, cold; by convention, colour; in reality, atoms and the void.'[11] We have seen in his treatment of change that Aristotle rejects atoms, since he believes space is continuous, with the result that there is no smallest, indivisible quantum of stuff (in Greek '*atomos*' means indivisible). So we know he rejects that feature of atomism. Still, his disagreement with Democritus runs much deeper than so much would suggest. He must, after all, agree that Socrates is in some sense made up out of parts smaller than he is himself. Suppose that at a given moment we identify 10,000 bits of Socrates. These are not Democritean atoms, let us allow, but simply small *Socrates bits* – bits of flesh, bone, organ material, eye material, what have you. Call this collection of bits **C**.

Now, one may ask: why is it not the case that Socrates is *in* **C**, in the technical sense of 'in' specified in the *Categories*? For, as one might argue, he is in them, not as a part, and cannot exist without them (*Cat*. 1a24–25).[12] In that case, we can say that **C** *is* Socrates, or indeed, that Socrates is in **C**. Put more fully, one might now say, 'This collection of bits of matter *just is* Socrates. He is, after all, nothing over and above them. Hence, as surely as one can say, "This stuff is white", one can also say, "This stuff is Socrates." Accordingly, just as *white* is, in Aristotle's terms, *in* this stuff, so too is Socrates, *in* this stuff – and in exactly the same sense.' Yet if he is in **C**, then Socrates is no longer *neither said-of nor in* and so fails, by Aristotle's own tests, to qualify as a primary substance.

To bring the matter closer to home, once we have introduced hylomorphism, we have some additional candidates for substance.

If Socrates is a hylomorphic compound, then substance might be: (i) the hylomorphic compound itself; (ii) the matter; or (iii) the form. Strikingly, Aristotle seems to realize this sort of consequence of hylomorphism shortly after its introduction in the *Physics*: 'Whether the form (*eidos*) or the substratum (*hupokeimenon*) is substance (*ousia*) is as yet unclear' (*Phys.* 191a19–20). More strikingly still, he fails in this connection even to mention the hylomorphic compound, the primary substance of the *Categories*, as a contender. Unless we suspect him of being sloppy or incomplete, this passage represents a potentially radical departure for Aristotle's theory of substance.

Indeed, whether or not we expect him to introduce the compound as a contender for qualifying as substance, as surely he does elsewhere (*DA* 412a6–9), the introduction of hylomorphism into Aristotle's discussion of substance seems to force one sort of departure. For now, however we think of Socrates' parts, is it not plain that his form is predicated of matter? If, as seems to be the case, form is predicated of matter but is not *essentially* predicated of it, then form is *in* matter. If, on the other hand, as Aristotle may come himself to believe, form is essentially predicated of the most structured or proximate matter,[13] then form is *said-of* matter. Since we must go one way or the other as long as form is predicated at all, form will be either *in* or *said-of*; hence, it will not be *neither said-of nor in*; hence, by the *Categories* criteria, form cannot be substance.[14] Consequently, that Aristotle here continues to promote it as a contender for substance already suggests that he has modified or abandoned his earlier tests for substantiality.

Taking all that together, the introduction of Aristotle's hylomorphic analysis of organisms upsets the theory of primary substance adumbrated in the *Categories*. We have seen some reason to suppose that it is positively incompatible with that theory, though we have no reason as of yet to draw this inference conclusively.[15] Minimally, however, we see Aristotle struggling afresh with his approach to substance in the *Metaphysics*; and it is understandable that he should do so. If Socrates is a metaphysical complex, a compound of form and matter, then one may well wonder what in the end qualifies as substance: the matter, the

form, or the compound of both. Or should we begin anew and consider some other contenders?

6.4 THE SCIENCE OF BEING *QUA* BEING

Aristotle does consider some other candidates for substance in his *Metaphysics*. The list of candidates mentioned is long, partly because he is keen to take into account the various contenders championed by his predecessors, as is in keeping with his policy of collecting the credible opinions (*endoxa*) at the beginning of any difficult inquiry.[16] Somewhat surprisingly, however, his inquiry into substance (*ousia*) is prefaced by a trumpeted announcement of the existence of a science of being *qua* being in the beginning of *Metaphysics* iv:

> There is a science which studies being *qua* being, as well as the properties pertaining to it in its own right. This is in no way the same as any of the sciences discussing some part of being, since none of them studies being generally, *qua* being. Rather, each of those sciences cuts off some part of being and studies its attributes, as, for instance, the mathematical sciences do.
>
> (*Met.* 1003b20–26)

So there is a science whose dedicated subject matter is being *qua* being (*to on hê(i) on*), an organized and articulable body of knowledge which attends not to beings of one sort or another, to living beings, or beings with magnitude, or beings which are mathematical abstractions. This science does not attend to beings insofar as they are one way or another, to beings in so far as they are quantities or beings insofar as they are relatives or even, it seems, beings insofar as they are substances. Rather, the science of being *qua* being is an inquiry into being – being insofar as it is being, full stop.

This announcement is doubly surprising. First, since a science requires a specific genus as its special object of study,[17] if there is a science of being *qua* being, then its genus would seem to be being itself. That is, since optics studies the visible and zoology studies animals, one might well expect the science of being *qua* being to concentrate on the genus of being. Unfortunately, Aristotle

elsewhere denies the existence of any such genus: being is not a genus (*APo* 92b14; cf. *Top.* 121a16–19, b7–9). Of course, this need not be a contradiction, since we may have here not an internal tension, but rather a simple change of mind. Then again, it need not even be a change of mind: Aristotle does not claim that there is no genus of being *qua* being, only that there is no genus of being. That is certainly fair enough. In that case, however, on the assumption that we continue to expect a single genus for each science, this response mainly postpones the issue by pointing directly to a new question: what is the genus of being *qua* being? If it is not being, because there is no such genus, then what might this genus be? Another way of asking this question is: what does '*qua* being' add to 'being' such that it legitimates a science of being *qua* being when there is no science of being? All these questions are occasioned by the announcement of the science of being *qua* being, because all seek to reconcile what Aristotle has said, or seems to have said, about the prospects of such a science outside of the *Metaphysics*.

A second sort of surprise is internal to the *Metaphysics*. We have been leading up to an inquiry into substance (*ousia*), and yet Aristotle has, it seems, taken a detour to announce the existence of a science of being *qua* being. There seems, at first, to be no obvious connection between the two enterprises. The surprise comes when Aristotle announces that he will prosecute the science of being *qua* being precisely by analysing substance (*ousia*):

> Just as there is one science which deals with all healthy things, so there is in the other cases. For there is a single science for investigating not only those individuals spoken of as one, but also when individuals are spoken of as related to a common nature; for these too are, in a certain way, spoken of as one. It is also clear, then, that it falls to a single science to investigate beings insofar as they are beings. And in every case, science investigates most centrally what is primary, that upon which other things depend, because of which they are spoken of. If, then, this is substance (*ousia*), the philosopher must possess the principles (*archai*) and causes (*aitia*) of substances.
>
> (*Met.* 1003b11–19)

So, according to Aristotle, any philosopher prepared to engage the abstract subject matter of being *qua* being (*to on he*(*i*) *on*) must immediately turn her attention to the nature of substance (*ousia*).

It is not immediately clear why Aristotle should think this is so. Let us call an inquiry into substance *special ontology*. Special ontology seeks to offer an analysis of one category of being, arguably the fundamental category of being, namely, substance. We may contrast this sort of inquiry into being *qua* being. Being *qua* being is, let us say, a form of *general ontology*. General ontology does not content itself with one or another category of being, nor even with category theory itself. It does not examine what it is to be a quantity or a quality or a substance; nor does it consider what sorts of principles might be employed to generate and justify a given theory of categories.[18] Substance, however, is but one category among others. Even if we allow that it is in some sense the most fundamental or basic category, substance is nonetheless simply one category of being. So, general ontology seems broader and grander than any inquiry restricted to substance. Indeed, special science sounds very much like a science which 'cuts off some part of being and studies its attributes' (*Meta*. 1003a24–25), namely substantial being, where this sort of activity is expressly held to be at variance with the science of being *qua* being, or general ontology (*Meta*. 1003a22–26).

Aristotle is sensitive to these two worries. Indeed, it may be, though the matter is disputed,[19] that he solves, or at least addresses, both worries in a single stroke. The worries, again, are internal and external to the *Metaphysics*. The internal matter concerns how Aristotle regards the relation between his inquiries into being *qua* being, or general ontology, and substance, or special ontology. They seem distinct, and yet he thinks of them as so intimately connected that pursuing special ontology constitutes an inquiry in general ontology. The external matter concerns how he reconciles his inquiry into being *qua* being with his denial of the existence of a genus of being. In this case, the worry is that he has contradicted himself, or, more mildly, quietly changed his mind without saying so or explaining how or why. The co-ordinated solution holds, on the second matter, that Aristotle neither changed

his mind nor contradicted himself, and, moreover, that his attitude towards the first matter explains how and why this is so.

The first step in appreciating this co-ordinated response is to re-emphasize a linguistic point obscured by our customary translations of *ousia* as substance. We have noted that the word '*ousia*' is an abstract noun formed off of the feminine participle *ousa* (being) of the verb *einai* (to be).[20] Although this comes out less awkwardly in Greek than in English, if no less artificially, an inquiry into *ousia* is thus an inquiry into, taken abstractly, *being-ness*, or, more discursively, into *what a being is*, or what makes *a being a being*. Now, the science of being *qua* being also takes its linguistic cues from this same verb *einai* (to be). The phrase '*to on he(i) on*' (being *qua* being) features a neuter participle from that same verb (*einai*, to be), and hence again we have *being* insofar as it is *being*. Now, if that much *being* threatens to clutter the available semantic space, the point to take away is just that Aristotle might naturally begin to think about what being is, insofar as it is being, by wondering what makes something a being. One might, in a less abstract domain, begin investigating what health is insofar as it is health, as opposed, for instance, to investigating what health is insofar as it is a marketable commodity, by wondering what makes something a healthy being, or what, simply, a healthy being is. The semantic connections are the same for being as they are for health, even if they are rather more attenuated and abstract. In any event, this much should help explain why Aristotle would look to substance (*ousia*, being) when engaging an inquiry into being *qua* being (*to on hê on*).

If these linguistic considerations point us in the right direction, they do not yet explain the deeper connection between substance and the science of being *qua* being Aristotle envisages. For this we must turn to Aristotle's most celebrated appeal to homonymy.[21]

Almost immediately after announcing the existence of a science of being *qua* being, Aristotle claims:

> *Being* is meant in multiple ways, but with reference to a single thing and one nature and not homonymously. Rather, just as every healthy thing stands to health, some by preserving it, and

> some by producing it, and others by being indicative of it, and others by being receptive of it, or as what is medical is related to medicine . . . so too being is meant in multiple ways, but with reference to a single core (*archê*). Some things are called beings (*onta*) because they are substances (*ousiai*), others because they are affections of substances, others because they are a path to substance or are destructions or privations or doings of substances, or are productive or generative of substance, or belong to things spoken of in relation to substance, or are negations of some one of these or of substance itself (wherefore we even say that non-being *is* non-being (*to mê on*)).
>
> (*Met.* 1003a33–1003b10)

Evidently, as Aristotle sees things, the centrality of substance in his scheme of categories somehow suffices to justify the existence of a single science of being *qua* being.

Before exploring why this might be so, one important potential impediment to understanding requires attention. This passage is supposed to be Aristotle's most celebrated appeal to homonymy. Yet in it he evidently *denies* that being is homonymous: '*Being* is meant in multiple ways [*legetai pollochôs*]', he says, 'but with reference to a single thing and one nature and *not* homonymously [*ouch homônumôs*]' (*Met.* 1003a33–34). Plainly, however, Aristotle is adverting to just one kind of homonymy, *discrete homonymy*, in issuing this denial.[22] That is, he is claiming that being is not such that its instances are related as 'nap' and 'nap' are related in:

1 Feeling fatigued, Helena took a long nap before dinner.
2 Heinrich was pleased with the nap of his new carpet.

These instances of 'nap' are discrete: a paraphrase of one yields nonsense when inserted in the other, and there is no core to which they both relate. That Aristotle is denying this sort of discrete homonymy and only this sort of discrete homonymy is vouchsafed by the illustration he immediately employs: *being* is like *health*, and health, unlike *nap*, is a core-dependent homonym. Contrast 'healthy' in (3) and (4) with 'nap' in (1) and (2):

3 Heinrich always had a healthy glow after he exercised.
4 A workout before dinner is healthy.

Again, we have homonymy, since what it is to be healthy in the case of a glow is not the same as what it is to be healthy in the case of a workout: a healthy glow is *indicative of health*, whereas a healthy workout is *productive* of health. In this case, unlike the case of *nap* in (1) and (2), we have a case of core-dependent homonymy, since *healthy* in (3) and (4) equally relate to a single core notion of health. It follows that in comparing being to health, Aristotle treats being as an instance of core-dependent homonymy. It further follows that when he suggests that being is not homonymous, he means only that it is not an instance of discrete homonymy.

With that matter in hand, we can turn to the important question of why Aristotle should assume that being a core-dependent homonym should suffice for there being a single science of being *qua* being, despite the fact that, as he sees it, there is no genus of being. Consider, then, the first three of Aristotle's categories: substance, quality, and quantity. Armed with just these categories (we might consider all ten, but the point is made already with just a few), we can easily generate the following sentences:

5 Substances exist.
6 Qualities exist.
7 Quantities exist.

Now, Aristotle's thought seems to be that *exist* in each of (5)–(8), functions just as *healthy* does in (8)–(10):

8 Socrates is healthy.
9 Socrates' complexion is healthy.
10 Socrates' current weight is healthy.

We are supposed to appreciate without argument that *healthy* in (8)–(10) qualifies as a case of core-dependent homonymy. Let us grant that. On this basis, we are now further supposed to appre-

ciate that upon reflection *exist* is likewise an instance of core-dependent homonymy. That, at any rate, is the implication of Aristotle's contention that all cases of being, like all cases of being healthy, refer to a single core (*Met.* 1003b6).

Aristotle's claim about *being* thus has three identifiable components: (i) *exist* across (5)–(7) is not univocal; (ii) *exist* in these instances is not a case of discrete homonymy; and (iii) *exist* in these claims is nonetheless dependent upon some core. Now, each of these claims can be examined; and important objections to each must be considered.[23] To understand the purport of Aristotle's contention, however, it is paramount to see that he is relying on a central feature of his theory of categories, to the effect that everything depends for its existence upon the existence of substance.[24] This is why, he supposes, everything leads back to one core, namely substance. Thus, *exists* in (6), the claim that qualities exist, must ultimately be understood, according to Aristotle, as *a substance is qualified in a certain way*; and similarly, *exists* in (7), the claim that quantities exist, must upon analysis come to the claim that *a substance has a certain quantity*. In either analysis, we find ourselves constrained, according to Aristotle, to make an ineliminable appeal to substance (*ousia*).

It is precisely here that we see the force of Aristotle's co-ordinated solution to the two worries we have raised. The two questions, again, concerned, first, how the science of being *qua* being could be squared with Aristotle's insistence that there is no genus of being, when every science ranges over some one genus (the external question), and, second, how pursuing special ontology should be understood to discharge the obligations of general ontology (the internal question). Aristotle's answer to both questions is, in a word, substance (*ousia*). This one-word answer addresses the concerns raised because, and only because, Aristotle contends, being is a core-dependent homonym.

As to the external question, he points out that there is one science of health and one science of medicine. It is the business of the single science of medicine to determine protocols of diagnosis and treatment, the proper training of medics, the appropriate form of medical implements, the contents of medical texts, and so

on. We say that a book is a medical book and that a certain course is a course of medical training. Though *medical* is not univocal across these instances, it is a core-dependent homonym and that suffices for there to be, as there indeed is, a single science of medicine. So too, then, in the case of being.

Turning to the internal question, concerning special and general ontology, it is important to notice two features of the core-dependent homonymy of being. First, every paraphrase of an existence claim concerning a category other than substance perforce makes reference to substance. That is, to say that a quality exists, contends Aristotle, is ultimately to say that a *substance* is qualified. Consequently, second, in one way of thinking of the matter, a complete account of substance exhausts what may be said about being insofar as it is being. By characterizing substances completely, one captures the core of being. Thereafter, one may consider being insofar as it is qualified in one way or another, insofar as it is a certain quantity, manifests a certain quality, or stands in a certain relation, and so on. If that is so, then an inquiry into substance is an inquiry into being *qua* being, because substantial being is being, insofar as it is being. Recall, in this connection, our initial linguistic observation: *ousia* means, in Aristotle's Greek, *being*.

Taking this altogether, Aristotle thinks he can exploit the core-dependent homonymy of being both to justify the existence of a single science of being *qua* being in the absence of a single genus of being and to pursue that science by providing an account of substance. As he claims:

> It is clear, then, that it falls to one science to investigate being *qua* being as well as those things belonging to it *qua* being; the same science will investigate not only substances but also things belonging to them, both the things mentioned but also the prior and the posterior, and genus and species, and whole and part, and other things of this sort.
>
> (*Met.* 1005a13–18)

The idea here is that while it falls to the science of being *qua* being to investigate substance, no methodological precept restricts that

inquiry to substance insofar as it is substance. Rather, the core-dependent homonymy of being licenses the metaphysician also to consider substance insofar as it has its various attributes and categorial features. For the categories were introduced, from their inception, as the categories of *being* (*Cat.* 1a20).[25]

Aristotle's thesis concerning the core-dependent homonymy of being is a bold stroke, but has rightly been subjected to investigation and criticism. Some areas for critical investigation include the central claims (i) that being is non-univocal and (ii) that it is nevertheless an instance of core-dependence. As for (i), we should not be expected to agree without argument that *exist* in:

1 Substances exist.
2 Qualities exist.
3 Quantities exist.

displays an obvious non-univocity. Merely pointing out that qualities and quantities depend upon substances for their existence does not suffice by itself to show that this is so. That brings us to (ii). Whether or not we agree with (i), it requires a further, and distinct, argument to show that qualities and quantities *do in fact* depend for their existence on substances. On the surface of things, at least, a Platonist might well say, for example, 'The property of *beauty* is simple whereas the property of *being a cosine* is not.' This claim seems to refer to properties and their properties without ever mentioning, explicitly or implicitly, anything about Aristotle's preferred examples of primary substance. Now, Aristotle may wish to press against that claim by insisting that, inevitably, given the correct analyses of beauty and of mathematical functions such as cosines, we will come around to appreciating that in fact they do implicitly rely upon primary substances, not only in their existential dependence conditions but even in the very analyses of *what they are*. That is to say, Aristotle may want to insist that not only do abstract entities depend upon the material beings from which they are abstracted in order to exist at all, but that any account which specifies their nature will perforce take note of this fact, and will define them, *inter alia*, as objects abstracted *from material beings*. So

much, however, would require in the first instance a successful argument for *in rebus* realism about such entities.[26] Perhaps there is such an argument; or perhaps there is not. In either case, the Platonist is well within his intellectual rights at this juncture to demand that it be produced. Further, having won that point, Aristotle will need to establish further that somehow, even to say *what a cosine is* will involve one, perforce, in mentioning the category of substance. This too may be so; but surely, at the very least, an argument is wanted. Here too, then, the Platonist need not simply accede to Aristotle's contention. So, the discussion has so far only got under way.

The introduction of these matters for further critical consideration is not to cast doubt upon Aristotle's enterprise. Rather, an eventual final appraisal of Aristotle's contention about being implicates his philosophical reader in a two-tiered activity: as we understand his view, we test it against plausible objections; and as we assess the ultimate force of those objections, we come to a deeper understanding of the view he promotes, along with its relevant competitors. Surely, however, any progress to be made in these matters begins with a deeper appreciation of Aristotle's actual execution of his study of the science of being *qua* being. He has already said that he intends to pursue this matter by investigating substance. He does not, however, launch directly into that investigation. Instead, Aristotle must first consider a principle 'which anyone who knows anything about beings (*ousiôn*) must know' (*Met.* 1005b15).

6.5 THE MOST BASIC PRINCIPLE OF ALL SCIENCE

A scientist working in a given domain justifiably assumes, without pausing to prove, the basic principles of that science. So, for instance, the biologist accepts the basic principles of biology concerning the nature of life just as a geometrist accepts without proof the axioms of geometry. Similarly, a zoologist deals with the parts and attributes of animals, but does not reflect on the prior matter of what animals are. Instead, the zoologist simply accepts that animals are living beings capable of perceiving and

turns to the job of collecting, assessing, and organizing data. This is not to say that there is no interesting question about the nature of animality or the nature of perception or the nature of life; nor is it to say that the philosophically minded zoologist is prohibited from donning a philosophical cap in order to pursue them. There are interesting questions about the nature of animals; and they are questions Aristotle is himself keen to ask and answer.[27] He does not, however, pursue them insofar as he is a field biologist. Rather, he accepts them as given and as definitive of his domain of inquiry and executes the tasks internal to that domain without attending to external questions concerning its contours.[28]

That said, the practitioner of a special science can produce upon demand the basic principles of that science. Surely, for example, a geometrist can rattle off the axioms of Euclidean geometry without giving the matter any thought. Similarly, in the case of the science of being *qua* being, it falls to the philosopher to state the most secure principles attending to that science:

> It is clear that it belongs to the philosopher, who is investigating about the nature of all substance, also to inquire into the principles of deduction. For it befits the one who knows best about each kind of thing to be able to state the most secure principle of that thing – and, accordingly the one who knows best about beings *qua* beings to state the most secure principle of all. This, though, is the philosopher. The most secure principle of all things is that about which it is impossible to be mistaken, for it is necessary that this sort of principle be both the best known (for everyone can be deceived about that which they do not know) and unhypothetical.
>
> (*Met.* 1005b5–14)

The relevant principle is, then, not hypothetical; it must be something about which it is impossible to be mistaken, being the most secure principle of all principles; and it is something which has already been learnt before undertaking an analysis of substance.

This most general principle, accepted by the philosopher, but sometimes doubted by the uncultivated, is the *principle of non-contradiction* (PNC): 'It is impossible that something both belong

and not belong to the same thing, at one time, and in the same respect' (*Met.* 1005b19–20). Somewhat regimented, Aristotle's version of the (**PNC**) holds:

- (**PNC**): For any property Φ and any object *x*, it is not possible that at some time t_1 *x* be both Φ and not-Φ in the same respect.

The principle has two key features. First, it is a modal claim. Aristotle is not claiming that we are unlikely to encounter a violation of this principle; nor is he merely predicting that we will never find it violated no matter how hard we look. Rather he is claiming that it is *impossible* that we should do so. It is thus a very strong claim. Second, the principle holds that nothing can be Φ and not-Φ *at the same time and in the same respect*. This second feature of the (**PNC**) is intended to stave off jejune objections. Someone might insist that the (**PNC**) admits of a counter-example, and so is false: if Protagoras is sitting in a chair and waving his arms about, then he is both stationary and not stationary; and he is moving and not moving. Further, if he is sitting in a chair at time t^1, then he is bent at t^1. When he rises at a later time t^2, then he is straight and so no longer bent. Someone might then suggest that Protagoras is both bent and not bent and so represents a counter-example to the (**PNC**). The principle guards against these sorts of objections by restricting the properties in question to those being exemplified *at one time* and *in the same respect*. With regard to the first case, in respect of sitting, Protagoras is not moving, but in respect of flailing his arms around, he is moving. That is perfectly consistent with the (**PNC**) as stated. Similarly, it is no violation of the (**PNC**) that Protagoras is seated at t_1 but standing, and so not seated, at some later time, t_2. For the principle recognizes that this is entirely possible, because it is, after all, actual, that one can be now Φ and later not-Φ. Indeed, in the current context, it is worth reaching back to Aristotle's discussion of substance in the *Categories*. There, recall, he claimed that it was most distinctive of substance that it remains numerically one and the same while receiving contraries (*Cat.*

4b10–21). Here too, then, change through time is no problem for the principle. On the contrary, according to Aristotle's hylomorphic analysis, qualitative change through time requires the loss or acquisition of qualities.

While insisting that the (**PNC**) is the most secure and certain principle of all, Aristotle is perfectly aware that some have doubted its veracity – or at least, he implies, have professed to doubt its veracity. Some, indeed, say plainly that they believe it to be false. Suppose, then, that someone straightforwardly professes to deny the (**PNC**). Aristotle's attitude towards this sort of person may sound a bit impatient. He suggests that what such people *say* cannot really track what they believe (*Met.* 1005b25–26). For it is not even clear that someone *could* believe the (**PNC**) to be false. To begin, as an *ad hominem* matter, Aristotle contends that the actions of such people tend to belie their pronouncements. People think that falling off a cliff is a bad sort of thing. If someone denies the (**PNC**), then she may evidently also believe that falling off a cliff is *not* a bad thing. Falling off a cliff is both Φ and not-Φ. Yet we do not observe the (**PNC**)-deniers walking off of cliffs, saying as they go over, 'This cliff is and is not a cliff and it is bad and it is not bad to walk off a cliff and a non-cliff.' Instead, they veer away from the cliff which is a cliff, presumably in the (**PNC**)-constrained belief that the cliff is not also not a cliff, and that walking off a cliff is bad and not also not bad (*Met.* 1008b2–38).

Still, so much is mainly *ad hominem*. Aristotle is after more than just that in his discussion of the most basic principle of all science. When he turns to consider the provability of the (**PNC**), Aristotle's attitude may seem to escalate from merely impatient to the disparaging:

> There are those, as we have said, who claim that it is possible for the same things to be and not to be [F], and moreover that people can suppose this to be so. Many, and especially those writing about nature, do use this language. Yet we have just now laid down that it is impossible for something to be and not be [F] at the same time, and in doing so have demonstrated that this is the most secure of all principles. They, however, demand that

> even this be demonstrated, because of their lack of education. For it *is* a lack of education not to know for which things it is necessary to request a demonstration and which not. In general it is impossible for there to be a demonstration of everything, for this would lead us off into infinity, and thus again to there being no demonstration. Yet if there are some things for which it is necessary not to request a demonstration, they are incapable of saying what more than this very sort of thing these might be.
>
> (*Met.* 1005b35–1006a11)

It would be a mistake, however, to regard Aristotle's remarks here as curt or dismissive. He is, on the contrary, quite serious: an educated person knows what can be proven and what cannot. In particular, an educated person is schooled in the demands of science, and knows that it is not possible that every thesis be demonstrated.[29] Those lessons well learnt remind us that since one can prove *p* only on the basis of what is prior and better known, any commitment to demonstrating *everything* would push us back without end, in search of ever more secure and basic propositions. Demonstration must come to an end.

It would be a bit of a disappointment if that were all Aristotle had to say by way of shoring up the most fundamental principle of all science. Fortunately, he has a good deal more to offer:

> Still, it is possible that it be demonstrated indirectly that this is impossible, if only our disputant will say something. If he will say nothing at all, then it would be ludicrous to address a reasoned inquiry to one with no reason – inasmuch as he has no reason. For such a man, insofar as he is such, is the same as a plant. I mean to differentiate indirect demonstration from demonstration proper, because someone offering a demonstration would seem to assume what was requested at the outset, whereas if another were responsible for this assumption, there would be an indirect demonstration and not a demonstration. The starting point for all such demonstrations is not the demand that the disputant say that something is or is not [F], since this might suppose this was what was requested at the outset, but that he at least *signify*

> something both for himself and for another. For this is necessary, if he is to say anything at all. For if he refuses, there is no reason in this sort of man, neither in his own right, in relation to himself, nor in relation to another. But if someone grants this, then there will be a demonstration; for something will already have been delimited. Yet it is not the one offering the proof who is responsible for this, but rather he who awaits him; for as he eschews reason he awaits reason.
>
> (*Met.* 1005b35–1006a26)

If a negative proof is a proof, then the (**PNC**) does admit of a proof, even if the proof in question is not a demonstration.

The indirect proof Aristotle has in view requires the detractor of the (**PNC**) *signify* something *both for himself and another* (*Met.* 1006a21). Now, signification is a more or less technical notion in Aristotle, but in its most general application it requires only that someone say something meaningful, where evidently the saying of something meaningful requires saying some one *determinate* thing. More narrowly, it requires that someone successfully pick out some one feature of the world. Thus, suppose that Protagoras asserts, 'Socrates is human.' Either he is saying something determinate – something which minimally excludes some things, or he is not. If he is asserting *that Socrates is human*, then, suggests Aristotle, he is not also asserting *that Socrates is not human*. If he insists, on the contrary, that he is asserting that as well, then one will have to ask him whether he is both asserting it and not asserting it; if he is both asserting it and not asserting, then he is not simply asserting it, and signifying some one thing.

Thinking of signification as successfully indicating some feature of the world, either Protagoras is ascribing the property *being human* to Socrates or he is not. If he is, then, suggests Aristotle, he is not at the same time *denying* that the property *being human* applies to Socrates. Moreover, if he is ascribing the property *being human* to Socrates, then he is evidently also enmeshing Socrates in a series of exclusion relations. That is, for instance, if necessarily, no human is also a puddle of water, then although Protagoras is not *asserting* that Socrates is not a puddle of water, when he signifies

that Socrates is human, he does say something having just this purport. Suppose that Socrates were to signify that Socrates is a human. If he were then asked whether Socrates might also at the same time be a puddle, and he responded that he might well be, then we would evidently have reason to doubt whether he had in fact managed to signify anything about Socrates in the first instance at all.

Now, with either the general or the narrow conception of signification in view, let the detractor of the (**PNC**) assert its falsity. If she could be successful in signifying its falsity, Aristotle implies, then she would actually at the same time be presupposing its truth. Seeking actively to undermine the (**PNC**) proves possible only within the very conceptual framework whose most basic principle is intended to be undermined. On the other hand, one who forbears seeking actively to undermine the (**PNC**) has failed to engage the interest of its proponents.

Looked at from Aristotle's perspective, if you ask the detractor one series of questions, you may come away frustrated; but if you ask another, you will come away with that person having indulged in a self-undermining and quixotic conceptual quest: 'Do you think the (**PNC**) is false?' 'Yes.' 'Do you also think the (**PNC**) is true?' 'Yes.' 'So, you think that the (**PNC**) is both true and false.' 'Yes.' 'And also that it is neither true nor false?' 'Yes.' Such a person, says Aristotle, is no better than a plant (*Met.* 1006a14–15). He means something quite specific in this complaint, namely, that in such an exchange we have no reason to suppose that we are in the presence of a being with a rational soul.[30] What, indeed, is the difference between that exchange and the following, between a philosopher and an aspen tree fluttering in the early autumn wind: 'Do you think the (**PNC**) is false?' '[Flutter. Flutter.]' 'Do you also think the (**PNC**) is true?' '[Flutter. Silence.]' 'So, you think that the (**PNC**) is both true and false.' '[Silence. Flutter.]' 'And also that it is neither true nor false?' '[Silence. Silence.]' If the detractor of the (**PNC**) objects, insisting that this caricature is unfair and demeaning, the only evident response, Aristotle implies, is to ask whether it is both fair and unfair, and both demeaning and not demeaning.

Still, Aristotle presses on, if the disputant will agree to signify something definite, she evidently destabilizes her own stance. This is because once such a concession is made, the following indirect argument, a dialectical argument, becomes possible – though again it is possible *only on the condition* that the interlocutor agrees to say something significant both for herself and for another. That is, after all, consequence of its being an indirect proof, rather than a demonstration. This, then, is Aristotle's indirect proof for the principle of non-contradiction (**IPNC**):

1 A denial of the (**PNC**) is possible only if someone signifies something both for oneself and for another (*Met.* 1006a22–24, b10–11).
2 Signifying something both for oneself and for another is possible only if meaningful discourse is possible (*Met.* 1006a21–22, b10–11).
3 Meaningful discourse is possible only if signifying something *determinate* is possible (*Met.* 1006a29–1006b17).
4 Signifying something determinate is possible only if (**PNC**) is true.
5 Hence, a necessary condition of the possibility of denying the (**PNC**) is that the (**PNC**) be true.

This proof is negative insofar as the entire edifice of the proof is predicated upon someone's denying it and thereby incurring a commitment to its truth. Should the interlocutor fall silent and refuse to deny the (**PNC**), then plainly its supporters have no-one to engage. After all, they have agreed from the onset that any direct proof by way of a demonstration would be impossible. This is as it should be, since plainly any such demonstration would be circular.

This last point is central, especially since as stated (**IPNC**) may seem to present precisely the sort of direct argument for the (**PNC**) which Aristotle maintains is impossible. For this reason, it is important to appreciate that (**IPNC**-1), the claim that a necessary condition of the possibility of denying the (**PNC**) is signifying something both for oneself and for another,[31] is really a

demand for a semantic commitment from the interlocutor. It is here that the indirectness of the proof strategy emerges. (**IPNC**-2) then enmeshes the concessions obtained in the first premise in a broader nexus of meaning. That premise holds that saying something significant both for oneself and for another is possible only if meaningful discourse is possible. It will not do, suggests Aristotle, to think that the (**PNC**) has local failures, that it is true in Chicago on Tuesday but false in Paris on Friday, or that it is true for some fragments of the discernible universe but false in others (*Met.* 1008a7–15).

That said, (**IPNC**-3), the claim that meaningful discourse requires the possibility of determinate signification, plays a central role in Aristotle's presentation of this issue. His dominant idea we do not achieve significant speech without having already having accepted a specific constraint, however unacknowledged that acceptance may be: *to signify something is to signify some one thing and not its opposite*. His point is not that there is no ambiguity in language, for, as he freely acknowledges, there most assuredly is (*Met.* 1006a31-b2). Rather, his contention is that if the detractor of the (**PNC**) has any claim to make, then it will involve some commitment to a claim's being made. More narrowly, if the detractor will only signify *something determinate*, then unless it is agreed that some one thing is signified, there is no point, and indeed no possibility, of moving forward.

Moving forward in this sphere does not amount to demonstration; for, again, demonstration in the strict sense of the term is out of the question for this most basic of principles.[32] Rather, if it can be shown, negatively, that doubts about the correctness of the (**PNC**) are articulated only within the conceptual framework whose most fundamental precept such doubts seek to deny, then the detractor has come to occupy an unstable and untenable position. Thus, Aristotle seeks to show that a denial of the (**PNC**) makes determinate sense only insofar as it tacitly embraces the principle it purports to reject. In this way, the denial appears self-undermining. This way is not the way of demonstration, but rather, thinks Aristotle, the way of negative proof – which is all the sort of proof the (**PNC**) admits or requires.

6.6 SUBSTANCE RECONSIDERED: FORM AND ACTUALITY

After presenting his negative proof for the principle of non-contradiction, Aristotle makes an observation calculated to put further pressure on anyone who would deny it: 'In general, those who use this argument do away with substance and essence' (*Met.* 1007a20–21). This contention helps explain why Aristotle thinks it is necessary to consider the (**PNC**) between his announcement of the existence of a science of being *qua* being, and his subsequent investigation of substance.[33] If someone denies the (**PNC**), suggests Aristotle, all predication will be accidental. Presumably, his thought is that essential predications are undeniably *necessary*, so that if anything is essentially Φ is it not only not not-Φ, but is such that it *cannot* be not-Φ, whereas if something is accidentally Ψ, it might have been not-Ψ.[34] For example, if Socrates is human and pale, then though he might have been not-pale, he could not have been not-human. Hence, any denial of the (**PNC**) immediately obliterates essential predication. Since substance requires essential predication, it also follows that such a denial does away with the category of substance.

Now that the (**PNC**) denier has been addressed, the investigation into substance which constitutes the core of the science of being *qua* being can commence in earnest. We have seen that Aristotle's introduction of hylomorphism complicates this investigation relative to the account of substance promulgated in the *Categories*.[35] Individual human beings such as Socrates qualified as primary substances in the *Categories* by being neither *said-of* nor *in*.[36] Yet those primary substances were not, or were not obviously, metaphysical complexes. Indeed, what seemed primary about the primary substance of the *Categories* was that it was supposed to be basic relative to other categories of being. With the introduction of form and matter, a new question arises: should form, matter, or the compound be regarded as primary?

The character of Aristotle's final response to this question has been very widely disputed. In the middle books of his *Metaphysics*, he embarks upon an intricately woven series of investigations concerning the nature of substance. Although they have proven

endlessly fascinating to scholars, little consensus has emerged about Aristotle's conclusions. Debate continues concerning what Aristotle actually decides about primary substance; and even where there is provisional agreement concerning the content of his conclusions, controversy rages about the ultimate defensibility.

One way to organize these debates divides those who regard the theory of substance of *Metaphysics* vii–ix as compatible with the theory of the *Categories* and those who regard the theories promulgated in these works as incompatible. Incompatibilists typically regard the theory advanced in the *Metaphysics* as the more mature of the two, and as supplanting the theory of the *Categories*, typically supposing that the apparatus of hylomorphism requires a rethinking and rejection of the simple tests for substantiality (being neither *said-of* nor *in*) deployed in the earlier work.[37] Compatibilists, by contrast, see no reason to reach any such conclusion. A compatibilist might adopt one of two main strategies. The first is direct: the preferred candidates for primary substance in the *Categories*, entities like Socrates or Pavlov the dog, emerge from the *Metaphysics* as the preferred candidate as well, even though hylomorphism reveals facets of them left unremarked in the *Categories*. A second compatibilist strategy is less direct. Perhaps, it is suggested, we should never have regarded the *Categories* and the *Metaphysics* as in competition with regard to primary substance. The two works are simply engaged in distinct, though complementary, indeed mutually supportive enterprises. The *Categories* presents the successful candidates for substance, whereas the *Metaphysics* supplies the explanatory underpinnings justifying the selection of those candidates.[38]

Here we shall consider an incompatibilist interpretation, one which has found favour with many, but by no means all, leading Aristotelians. According to this approach, Aristotle need not (but could well) give up completely on the practice of speaking of compounds of form and matter as substances, but only because he comes to see them as substances by courtesy, or in a less complete sense than what proves ultimately to be primary substance: the form. Why should form be substance? At first blush, it seems like a loser of a candidate: a form is predicated of some matter, and is thus posterior to it. Whatever else they may be, primary substances

are, well, primary: they are basic and prior to all else. If forms are posterior to matter, then they are already on that score debarred from the title of substance.

Aristotle's response is two-pronged. First, he seeks to show, both in the *Physics* and the *Metaphysics*, that matter is not a suitable candidate for primary substance. Second, he argues in the *Metaphysics* that despite first appearances, form is primary, because it is in some important respects prior to the matter whose form it is. Form is, after all, actuality, and matter potentiality; importantly, in this connection, actuality is prior to potentiality.

Let us consider these contentions in turn.

If form is predicated of matter, then matter is prior to form and so it, rather than form, should be substance. Aristotle considers this point of view from different vantage points in the *Physics* and the *Metaphysics*, only to arrive at the same conclusion: matter is not substance. In *Physics* ii 1, he considers the view of one Antiphon, someone otherwise not known, who evidently contended that matter not only underlies change, but is more continuous (*Phys.* 193a10–20). As he pointed out, if we take an ordinary wooden bed and bury it, what sprouts up is not a bed-bearing plant, but a tree. It is, he concludes the wood, the matter of the bed, which persists. Since substance, even in Aristotle's own terms, is what persists (*Cat.* 4a10–11), we should conclude that the matter is substance while the form is not. The form seems, indeed, to be an accident of the matter. In the terms employed in the *Categories*, the form seems *in* the matter; but since primary substance is neither said-of nor in, the form cannot be primary substance. Thus the matter emerges victorious.

Aristotle's response is consequential for our eventual understanding of his attitude towards form. He suggests that if we rely exclusively on persistence conditions when thinking about substance, then we are driven ever downwards, well below the level proposed by Antiphon. That is, wood, the matter of a bed, is itself already a sophisticated compound of form and matter. The form–matter distinction is relative: while bricks may be the proximate matter of the house, bricks are themselves compounded from lower orders of matter, say earth and water, and some shape,

brick-shape. In that terminology, the proximate matter of most compounds does not fare well on the persistence test upon which Antiphon relies. So, if persistence alone is to determine what qualifies as substance, we will be driven ever downwards, to the point where we reach either the basic indivisible atoms of all matter, whatever they may be, or a hypothesized formless primordial stuff, capable of becoming anything, but being nothing in itself. Now, since he holds that matter is continuous, Aristotle denies that there are basic atoms, small quanta of stuff which can no longer be divided. It follows, then, if he is right about that, that those preferring persistence alone are compelled to accept as substance formless ooze which cannot even be characterized in positive terms (*Phys.* ii 3).

This result is further developed and extended in *Metaphysics* vii 3, though with a slightly different impetus. Suppose we think of substances as *ultimate subjects*, that is, as those entities which receive predicates but are not themselves predicated of anything more basic. Arguably, this is the animating insight of the account of primary substance in the *Categories*. Now enter form and matter, with the seeming result that matter has form predicated of it. We say that the bronze is Hermes-shaped, not that the Hermes shape is bronze. Rather, if we speak this way at all, we are inclined to say that the Hermes shape is realized in bronze. Now, so much suggests that perhaps bronze, the matter, and not the form ought to be regarded as substance:

> The substratum is that of which other things are predicated, but is itself no longer predicated of anything else. So, we must first make a determination of this. For that which is substratum in a primary way seems most of all to be substance (*ousia*). In this sort of way, matter is said to be substance, but in another way the shape (*morphê*), and in a third what comes from these. By *matter* I mean, for instance, bronze, by *shape* the configuration of its structure, and by what *comes from these* the statue, the composite. Consequently, if the form is prior to the matter and more a being, then it will also be prior to what comes from both, and for the same reason.

> Now, we have said in rough outline what substance is, that it is not that which is predicated of a substratum but is that with respect to which other things are predicated. But it is necessary to say not only so much; for this is insufficient. First, it is itself unclear – and, moreover, matter will turn out to be substance. For if this is not substance, it escapes us what else it might be: when all else has been stripped away, nothing seems to remain. For among the other features of bodies, some are affections and products or capacities, while length, breadth, and depth are certain quantities but not substances (since quantity is not substance); rather, that to which these belong in a primary way is substance. Moreover, when length, breadth, and depth are stripped away, we see nothing remaining, except what is bounded by them, so that for those inquiring in this way it will be necessary that matter alone will be substance. By matter I mean that which in its own right is neither some thing nor a quantity nor any other of the other things in terms of which being (*to on*) is delimited. For there is something of which each of these is predicated, so that its being will differ from the being of each of the other categories (for other things are predicated of substance, but this is predicated of matter). Consequently, the ultimate substratum in its own right is neither some thing nor a quantity nor anything else; nor even will it be a negation, since even negations will belong to it co-incidentally. For those who see things on the basis of these considerations, then, it turns out that matter is substance. But this is impossible. For being separate and being some particular thing seem most of all to belong to substance. Accordingly, the form (*eidos*) and what comes from both form and matter would seem to be substance more than matter.
>
> (*Met.* 1028b36–1029aa30)

If we rely exclusively on the thought that substance must be the recipient of predicates without being predicated of anything else, then again we are driven ever downwards. We end up with something which is nothing in its own right, a primordially plastic undifferentiated sludge of potentiality.

A defender of Antiphon will want to know what is so very bad about that result. Perhaps this is exactly so: substance is the basic stuff, whatever that may be. The basic stuff, or the basic atoms, if there prove to be basic atoms, qualify: the basic stuff is the ultimate subject of all predication and persists, as nothing else. If atomism is false, then the ultimate subject of all predication will simply be a continuous, atomless gunk.

Aristotle's treatment of matter in *Metaphysics* vii 3 provides his reasons for rejecting this result. A substance, he suggests, is both some determinate thing and something actual: but matter thus construed is in itself nothing particular; nor does it even exist, again in itself and unenformed, in actuality. Thus, we have Aristotle's argument against matter (**AM**):

1 Suppose that the ultimate subject of predication, whatever that may be, is substance.
2 Matter is the ultimate subject of predication.
3 So, if (1), matter is substance.
4 Matter is in itself not a particular, and has in itself no determinate quantity, length or breadth.
5 If (4), then matter is in itself nothing determinate, actual, or independently existing.
6 Substance is something determinate, actual, and independently existing.
7 Hence, matter is not substance.
8 Hence, it is not the case that ultimate subject of predication, whatever that may be, is substance.

As a candidate for substance, (**AM**) decides against matter – where matter is understood as the extremely bare and denuded stuff characterized in *Metaphysics* vii 3.

Now, both (**AM**-4) and (**AM**-6) require special comment. (**AM-**4) is the claim that matter is in itself not a particular, and has in itself no determinate quantity, length or breadth. Aristotle's idea here is continuous with his argument against Antiphon in the *Physics*. One might wish to say not that whatever is continuous is substance, but in an allied way that whatever proves to be the ulti-

mate subject of predication is substance. Now, though, we begin a backwards march. The bronze is Hermes-shaped. Of course, that quantity of bronze need not be Hermes-shaped. It might be recast as a statue of Napoleon or melted and left as a heap upon the foundry floor. Indeed, if we are thinking of just the bronze, we might go back further and say that the substratum of the bronze, the copper and tin, are brazen, so that 'being bronze' is itself predicated of them. The same holds in turn of the copper and tin. Ultimately, we reach the stuff which underlies all predicates. What is that? It is nothing 'positively characterized' as Aristotle says; for then it too would be a form–matter compound. Nor even is it a particular quantity: the stuff underlying even the heap on the floor might be divided and scattered. It has no determinate length, no determinate breadth, and indeed no determinate anything. It is, simply, indeterminate.

This, however, is the source of Aristotle's unhappiness. We expect substances to be basic beings, not merely basic subjects or impredicable substrates. This is what Aristotle means when he claims that 'being separate and being some particular thing seem most of all to belong to substance' (*Met*. 1027a27–29). Being *separate* (*choriston*) is a technical term for Aristotle, by which he indicates that substances are independent, in the sense that they do not depend upon other things for their existence. Thinking again back to the *Categories*, a clear example of a dependent being is the non-substance particular, Socrates' pallor. Plainly, Socrates' pallor depends upon Socrates for its existence, whereas Socrates does not depend upon his pallor. He might well carry on without it. Key to understanding Aristotle's objection to matter is, then, coming to see why it is neither a particular thing nor separate. He thinks that matter fails these tests, because matter is nothing at all in its own right. Matter depends upon form for its actual existence. Even to exist in some quantity or other, matter depends upon some form. Upon reflection, however, this should prove unsurprising. We have seen from the beginning that according to Aristotle's hylomorphism, it is the presence of form which makes some matter an actually existing F.[39]

This same priority of form also underwrites one of Aristotle's most significant arguments for form as substance. He begins the

last chapter of the most difficult book of his discussion of his *Metaphysics* by announcing the need to 'make a fresh start' (*Met.* 1041a6–9). This is an occasional trope of Aristotle's whereby he indicates that he has finished his preliminary discussions, that he has exhausted his consideration of the consequential opinions (*endoxa*) and the general phenomena,[40] and is prepared to advance his own considered view. In this chapter, he shows in still greater detail why matter should be regarded as dependent upon form. Suppose, he suggests, that we think of a compound of form and matter as analogous to a simple monosyllabic word, 'cat'. The elements of the syllable are its letters, 'c', 'a', and 't'. Now, one might think of the syllable as simply identical with those elements. Aristotle urges to the contrary:

> Since that which is compounded from something so as to be one and a whole – not in the way that a heap is, but as a syllable is – where a syllable is not its elements, since the syllable 'ba' is not the same as 'b' and 'a', nor is flesh the same as fire and earth (since when they are dispersed, the wholes – that is, the flesh and the syllable – no longer exist, whereas the elements – the fire and the earth – do exist). What a syllable is, then, is not only the elements, the vowel and the consonant, but also something else, and the flesh is not only fire and earth, or hot and cold, but also something else. If it is to be necessary that this something else is either (i) an element or (ii) composed of elements, then, (i) if it is an element, the same argument will reapply, since flesh will be composed of this and fire and earth and something still other, so that it will march off into infinity; but (ii) if it is *composed* of the elements, it will clearly be not from one but from many, and that same thing will obtain, so that we will once again use the same argument in this case as we did for flesh and the syllable. It would seem, then, that this something else is not an element but the cause (*aition*) of this being flesh or of that being a syllable, and so on with the other cases. This is the substance (*ousia*) of each thing, since this is the primary cause of its being. For not all things are substances, but as for those which are substances, they are naturally constituted and are due to nature, and

> this nature (*phusis*) would seem to be substance, where nature is not an element but a principle (*archê*).
>
> (*Met.* 1041b11–31)

In this passage, Aristotle offers his primary argument against those who would regard substance as identical either with some single element or with some mereological aggregate of elements.

We see first that an entity cannot be identical with its elements, since they may exist when it does not. We should not say, that is, that 'cat' is identical with 'c', 'a', and 't', since those *elements* equally combine into the monosyllabic word 'act' and the nonsense syllable 'tac' and the non-syllable 'tca' and the jumble $^{c}_{t\ a}$, and so forth. In short, since the existence of these elements is consistent with the non-existence of the entity whose elements they are, some further principle must explain the existence of that entity. Further, the elements depend upon some principle for their being the elements they are in the first instance. Since the elements are as matter is, and matter depends upon the form, the elements already depend upon form and not the other way around.

Taking all that together, Aristotle offers the following argument for the priority of form (**PF**):

1 Possibly, $e_1 \ldots e_n$ are the elements of some object O at t_1, and at t_2 $e_1 \ldots e_n$ exist while O does not.
2 (1) only if at t_1 there exists some x whose presence unifies $e_1 \ldots e_n$ in such a way that the object O exists.
3 If x is another element of O on par with $e_1 \ldots e_n$, then the same argument will apply.
4 Hence, at t_1 there exists some x which is not an element, but a principle (*archê*) in virtue of whose presence O is a unified whole.
5 Further, if this principle is complex, then there will be a further question *ad infinitum* as to the principle in virtue of which it forms (as well as it and $e_1 \ldots e_n$ form) a synchronic unity.
6 Hence, this principle is not complex but simple.

Since it is this principle in virtue of whose presence some elements qualify as elements of a unified object, the elements cannot by themselves account for the existence of complex unities.

That may sound abstract, but the reasoning is really rather straightforward. Much of Aristotle's point hinges on (**PF**-4). A house is not identical with the bricks which are its matter. For those same bricks might exist when the house does not. So, something must be added to the bricks in order for them to qualify as a house. If merely another brick – something of the same kind – is added, then the same argument will apply all over again. Hence, there must be some further thing, responsible for the fact that the bricks qualify as a house. This Aristotle calls a *principle* in order to signify that it is not merely another element, but a different kind of thing altogether. It is not matter, but form.

The purport of (**PF**-4) is still better appreciated by reflecting not on a synchronic artifact, that is, for example, a house existing at a certain time, but rather on a living being, which sustains material replenishment as it grows and changes. We speak of a single body as getting bigger, as taking on and sloughing off matter, and as remaining numerically one and the same through its material replenishments. A body is a bounded entity, existing through time, capable of replacing its material bits while remaining the same. This is true, after all, of your body. What, though, makes your body your body? It is an odd-sounding question when first asked, but seeing why Aristotle might want to ask it helps explain his brief for form. Your body cannot be the body it is merely by being identical with some matter at a time; that matter might exist when the body does not. More importantly, and herein resides the dependency of matter upon form in Aristotle's view, for some matter to qualify as your body, it must be the matter of your form. There is a lot of matter in the general area in which you exist at present. Only some of it is your matter. If you are sitting on a sofa, for example, the matter of the cushion is not your matter, even though it is perfectly contiguous with you. So which matter is yours? Trivially, one wants to say, the matter inside of your boundaries. Your boundary is, however, given by your form. Hence, concludes Aristotle, the matter of

your body is parasitic on your form for its identity conditions, at any rate insofar as it is the matter of your body.

It follows in general, concludes Aristotle, that form, as the cause of something being what it is, is prior to the matter. Since what is prior is substance, however, form is substance. Thus, when he concludes finally that the nature is substance, Aristotle determines the case in favour of form. This is made most explicit towards the end of the passage quoted, where Aristotle argues directly, and simply, in favour of *form as substance* (**FS**):

1 Whatever is the primary cause of any x being F is substance.
2 Form is the primary cause of every x being F.
3 Hence, form is substance.

The argument is plainly valid, though each of its premises masks a great deal of theory in its very simplicity. Briefly (**FS**-2) draws upon the insights of the previous argument for the primacy of form (**PF**) by claiming that it is the presence of form which accounts for any quantity of matter being what it is. So many bricks are a house, as opposed to a wall or an oven, only by virtue of their realizing the form of a house. (**FS**-1) is more complex. At its root, however, (**FS**-1) is an expression of Aristotle's requirement that substance be something determinate and independent: substance is primary in the sense that it is something determinate, not amorphous like matter, and independent, in the sense that it relies upon nothing beyond itself for its identity conditions.

Taking all that together, then, we find Aristotle first denying that matter qualifies as substance, on the grounds that it is insufficiently determinate and independent, and then contending that form fills the role.

Aristotle touts as a benefit of his hylomorphism that it helps solve a problem of unity attending competing theories. In *Metaphysics* vii 17, he argues that some unified beings are more than mere aggregates. Suppose that Callias is made up of exactly 452,393,288 atoms. (Now, of course, Aristotle is not an atomist, but he will allow that Callias has parts, including his various organs and their parts.) Precisely those atoms might exist even though Callias

does not. When, for example, those atoms are smeared from the earth Alpha Centauri, they exist, but Callias does not. For Callias to exist, contends Aristotle, these parts must be unified by a principle which is not simply another atom; for if it were, the same modal problem would simply reappear. What is needed is a unifying form.

The form's role in unifying the material elements of an entity stems from its making the elements exist as some actual F or other. The 452,393,288 atoms are potentially Callias, until they realize his form, in which case, they are actually Callias. So, then, should we regard the group of 452,393,288 atoms as one thing and the form as another, to be welded together by some metaphysical blowtorch or other? Aristotle thinks the mistake has already entered in the very asking of this question: the matter is only potentially an F before being enformed, with the result that there is but one F thing once the matter is enformed:

> People seek an account which unifies and differentiates potentiality and actuality. Yet it is the case, as we have said, that the proximate matter and the form are one and the same, the one in potentiality and the other in actuality, so that it is the same thing to seek the cause of something's being one and to seek the cause of oneness in general. For each thing is one, and what is in potentiality and what is in actuality are in a way (*pôs*) one: there is no other cause here (other than the efficient cause, which brought it from potentiality into actuality).
>
> (*Met.* 1045b16–23)

In considering the unity of a hylomorphic compound, one can and should consider the efficient cause, the activity by which the matter came to be enformed. There is, however, no further question to be asked regarding the unity of form–matter compounds: the form and matter are not present as discrete, detachable entities. Rather, the form, as actuality, makes the proximate matter, as potentiality, an actual F thing.

To illustrate, one can say that these bricks are a house when and only when they are enformed by the form of a house. What is the

unity of a house? It is precisely the unity of a hylomorphic compound. Note, again, that this compound is not a mere aggregate, since the bricks may exist without a house. Nor is the compound composed of two entities on an ontological par. When the house is destroyed, the form does not remain, or go to housey heaven. Rather, the form ceases. Still, it is the presence of the form, which itself realizes the function definitive of houses, which permits material replenishment while the house continues to exist. Form–matter compounds are actually existing beings, made so by the presence of the form, as actuality. For this reason, concludes Aristotle, form is substance.

6.7 CONCLUSIONS

It is salutary to bear in mind that this conclusion on behalf of form is an expression of one family of interpretations of Aristotle's mature theory of substance, according to which it is incompatible with the theory of substance advanced in the *Categories*. The interpretation advanced relies heavily on the thought that form provides unity and actuality to a material substance: the presence of a form *F* makes so much matter a single, actually existing *F* thing. It should be noted that whatever its merits, this interpretation also, unsurprisingly, leaves some features of Aristotle's account of substance unexplained.

Foremost among these features is Aristotle's practice of referring not only to forms as substances, but to compounds as well. Indeed, in the chapter immediately following the section in which Aristotle presses his case against unity given in terms of mereological aggregation, and in favour of form as substance (*Met.* vii 17), he reverts to speaking of form, compound, *and* matter as *all* substances; but that is surprising, even bewildering, if the conclusions drawn so far are correct (*Met.* 1042a26–31). One somewhat deflationary way of handling these sorts of passages, short of regarding Aristotle as self-contradictory, is to suppose that he in the end admits all three as substances, but to differing degrees, and only when properly understood as differing in this way. Thus, if the compound is substance, then it is substance only

insofar as it is *enformed* matter. Further, matter, which Aristotle excoriates twice over as unsuitable for substance, might yet be substance so long as we are thinking of the proximate matter, that is, as that matter whose identity conditions are given by the form. Thus, in this sense, one might say that the body is substance, but only because we are thinking of the body as already *enformed* matter. In this case, then, as in the case of the compound, form qualifies as substance to the highest degree, and the compound and the matter only derivatively and insofar as they are regarded as dependent upon it.

Needless to say, puzzles and objections remain, as do competing interpretations.[41] As these puzzles are further pursued and the interpretations weighed, it bears reflecting that our puzzles about substance are nestled within another puzzle, about the relation of Aristotle's inquiry into substance to his broader investigation into being as such, which he undertakes in the form of a science of being *qua* being. As we have seen, Aristotle seeks to connect his inquiry into substance (*ousia*, or 'being') to his account of the science of being *qua* being (*to on hê(i) on*) first by insisting that substances are primary among beings (*Met.* 1003b11–19) and second, consequently, with an appeal core-dependent homonymy of being – the suggestion that all being depends for its ultimate account on the core instance of being, namely substance.

Inevitably, approaches to these interlocking puzzles reciprocally inform one another, so as to yield metaphysical investigation challenging in virtue of its unavoidably abstract character. Here we have endeavoured not to provide a fully articulated and defended account of Aristotle's mature theory of substance, or of the relation that this theory bears to his science of being *qua* being, but rather to invite his readers into the ongoing lively exegetical and philosophical controversies surrounding his metaphysical explorations. It will be appreciated that in approaching Aristotle's *Metaphysics* for the first time, it is necessary to step cautiously, since virtually every facet of this work, however rich and suggestive it may be, has also been subject to competing interpretation and widely varying critical assessment. If this text resists easy interpretation, however, minute study of Aristotle's *Metaphysics* amply rewards those who persevere to undertake it.

FURTHER READING (* = ESPECIALLY SUITED TO BEGINNERS, IN TERMS OF CLARITY OR ACCESSIBILITY)

Primary Sources

Aristotle, *Categories* 1–5, *Metaphysics* i, ii 1, iii 1, iv 1–6, v–viiii, xii 6–10; *De Partibus Animalium* 1 1, 5; *De Anima* ii 1–4

Secondary Sources

Annas, Julia, *Aristotle's Metaphysics M and N*, translated with introduction and notes (Clarendon Press: 1976)

Bostock, David, *Aristotle: Metaphysics VII–VIII*, translated with commentary (Clarendon Press: 1994)

*Cohen, S. Marc, 'Aristotle's Metaphysics', *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu/entries/aristotle-metaphysics/)

Kirwan, Christopher, *Aristotle: Metaphysics Γ, Δ and E*, translated with notes, second edition (Clarendon Press: 1993)

Loux, Michael, *Primary Ousia* (Cornell University Press: 1991)

Madigan, Arthur, *Aristotle: Metaphysics Books B and K 1–2*, translated with commentary (Clarendon Press: 1999)

Owens, Joseph, *The Doctrine of Being in the Aristotelian Metaphyics*, 3rd revised edition (Toronto, Pontifical Institute of Medieval Studies: 1978)

Shields, Christopher, *Order in Multiplicity: Homonymy in the Philosophy of Aristotle*, Chapters Four and Nine (Oxford University Press: 1999)

Seven

Living Beings

7.1 PSYCHOLOGICAL APPLICATIONS OF HYLOMORPHISM

Because the speculations of Aristotle's *Metaphysics* can be challenging in their sheer abstract complexity, it proves instructive to consider a concrete implementation of the theory developed there. In many respects, Aristotle's treatise on living beings, *De Anima*, provides just such an implementation. In this work, which is clearly a mature production, Aristotle brings the full force of his hylomorphic metaphysical system to bear on problems pertaining to the nature and activities of living beings. Aristotle directs his four-causal explanatory framework first to some vexed questions about soul–body relations, and thereafter to the proper analysis of the main functions of living beings, namely nutrition, perception, and thought. The justification for his doing so is uncomplicated: the activity associated with each of these functions is a kind of change and from the *Physics* onwards, Aristotle models change in hylomorphic terms.

In applying this model to the functions of living beings, Aristotle both extends and to some extent taxes his preferred explanatory framework. At the same time, especially as regards soul–body relations, Aristotle illustrates how hylomorphism offers an attractive middle way between some otherwise unhelpfully polarized alternatives. In the process, he helps to illustrate the account of substance advanced in the *Metaphysics*. This is unsurprising upon reflection, since he introduces living beings as being paradigmatically, or perhaps even exclusively, substances in the most strict and proper sense (*Met.* 1041b28–31, 1043b21–23; cf. 1042a7–8, 1043a5–6,

1070a5–20; *Phys.* 192b32–34). So, we should expect to discover his hylomorphism deployed in full force in his work on the soul.

Aristotle meets this expectation several times over. For his psychological theory comprises three successive deployments of hylomorphism: (i) to soul–body relations, (ii) to perception, and (iii) to thought. In each successive application, we find the theory proving fruitful though ever more attenuated. As it will turn out, although he does not stretch his theory to the breaking point, Aristotle will need to develop hylomorphism to come to terms with the variegated data of our psychological lives. His *De Anima* consequently contains some of this richest and most challenging hylomorphic theorizing.

7.2 THE SOUL: *LIFE* IS MEANT IN MANY WAYS

As its Latin title suggests, Aristotle's *De Anima* is a work *On the Soul* (Greek *psuchê* = Latin *anima* = English *soul*). (It is conventionally referred to by its Latin title.) There may consequently be a tendency in some of Aristotle's modern readers to misapprehend the dominant concern of the work. This is because Aristotle conceives of the soul in very broad terms relative to some later Christian and Cartesian conceptions. Thus, a Christian woman might ask her priest whether she could expect to meet her dog and faithful companion in heaven, only to find herself embroiled in a discussion as to whether dogs have souls. Her priest might respond that only creatures with rational souls capable of free choice are immortal, so that even if we allow souls to dogs, they are not heaven-bound. Descartes, evidently, had an even sterner contention: for him, brutes are simply soulless machines.[1] For Aristotle, each of these claims is a non-starter: every living being is capable of taking on nutrition, which he regards as 'the first and most common capacity of soul, in virtue of which life belongs to all living things' (*DA* 415a24–25). That is, for Aristotle 'being alive' and 'being ensouled' are co-extensive. All and only living things have a soul. As he says, 'what is ensouled is distinguished from what it unensouled by living' (*DA* 431a20–22; cf. *DA* 412a13, 423a20–26; *PA* 687a24–690a10; *Met.* 1075a16–25).

It does not follow, of course, that all living beings have souls with the same capacities. On the contrary, contends Aristotle, the capacities of living things display a kind of hierarchy, with a capacity at any level presupposing those beneath it. Thus, plants have nutritive souls; animals have perceptual souls and so also nutritive souls; and human animals have rational souls, and so also both perceptual and nutritive souls. His reason for maintaining this is broadly teleological: outside of the realm of the divine, every living thing is mortal and so is born, grows, declines, and dies. It would be idle and an affront to nature for an animal to be equipped with the capacity to detect and acquire food if it had no means of digesting or using it. Similarly, if humans require perception in order to learn and think, then the possession of reason would be pointless, and so contrary to the efficiencies of nature, if there were rational animals without sensory capacities (*DA* 432a3–9). Nature, as Aristotle often repeats, does nothing in vain (*DC* 271b14; *PA* 658a9, 661b24; *GA* 741b-5, 744a36; *Pol.* 1256b21).[2]

In this sense, Aristotle's commitment to the existence of souls is hardly controversial. Anyone prepared to allow that some things are animate and others inanimate should be prepared to concede, in his sense, that some beings and not others are ensouled. Charles, Prince of Wales is a living being, while the buckle on his left boot is not. Thus, Charles is animate, or ensouled, and his boot buckle is not. Now, that we are able to make this sort of discrimination does not by itself equip us to decide whether every borderline case qualifies as living. That is, we may recognize that one thing is animate and another is not without also being able to say decisively whether certain viruses are alive, where this might be extended to range over computer viruses which seem end-directed, self-replicating and able to engage in a sort of auto-morphogenesis. Or if we feel secure about such judgments, we might nonetheless find ourselves perplexed about laboratory synthesized organic compounds used for catalysing biochemical reactions of various sorts. Nor, more importantly, does the ability to discriminate the uncontroversial cases require that we are able to produce upon demand an analysis of life. That is, our judgment

that boot buckles are not alive while princes are should not be rendered insecure merely by a subsequent inability to produce an airtight account of life's essential features, or even of its necessary and sufficient conditions.

In fact, Aristotle doubts that such conditions are forthcoming. He thinks that *life* is 'meant in several ways' (*pleonachôs legomenon*; *DA* 413a20–21), a locution he regularly uses to indicate the presence of homonymy.[3] Presumably, the sort of homonymy he has in view is core-dependent homonymy, that is, the sort of homonymy according to which there is a central and controlling case to which all non-core cases are related in an asymmetric way. To illustrate, *life*, Aristotle supposes, behaves like *healthy* in the case of Socrates, whose complexion and dietary regimen we call healthy along with the man himself. In these cases, the healthy manifested by Socrates is the core of health and we refer back to it when we explain what it means for his regimen and diet to be healthy. Now, as we have seen, a commitment to core-dependent homonymy carries with it a three-fold commitment: (i) to establish non-univocity; (ii) to show connection; and (iii) to exhibit core-dependence. Thus, if Aristotle's account of *life* is an instance of core-dependent homonymy, we should expect him to discharge each of these three commitments.

Even if we have difficulty with borderline cases, we should not suppose that it is immediately obvious that life in (1)–(3) is non-univocal:

1 Socrates is alive.
2 My dog, Pavlov, is alive.
3 Mrs Butterworth's crab-apple tree is alive.

We might well suppose that in each of the predications *is alive* comes to the same thing – whatever that may prove to be upon analysis. In any event, the non-univocity is not as apparent as it seems to be in the case of *is healthy*. Presumably, however, this is a point appreciated by Aristotle, since he relies on the case of health to illustrate the phenomenon, while he finds it necessary to argue that it obtains in the case of life.

His argument for the non-univocity of life is a consequence of his twin commitments to essentialism and substantial forms.[4] It emerges in a striking, if somewhat initially obscure claim about the essence of living beings:

> The soul is the cause and source of the living body. But *cause* and *source* are meant in many ways. Similarly, the soul is a cause in accordance with the ways delineated, which are three: it is (i) the cause as the source of motion [= the efficient cause], (ii) that for the sake of which [= the final cause], and (iii) as the substance of ensouled bodies. That it is a cause as substance is clear, for substance is the cause of being for all things, and for living things, being is life, and the soul is also the cause and source of life.
>
> (*DA* 415b8–14; cf. *PN* 467b12–25, *Phys*. 255a56–10)

This passage is rich in its detail concerning Aristotle's conception of the soul. We shall return to it, but with regard to establishing the non-univocity of life, what bears scrutiny is the surprising locution that 'for living things, being is life'. When Aristotle speaks this way, he means not only that living beings are essentially alive, but that the essence of this or that kind of living being *is* simply its being alive. This, though, provides an impetus for non-univocity.

We say that Socrates is alive, we say that a dog is alive, and we say that a crab apple tree is alive. We also say, or Aristotle also says, that God is alive (*Met*. 1072b24–30). Notice, however, that the essences of these different sorts of living beings diverge: crab-apple trees are essentially plants, that is, beings capable of nutrition and growth, whereas Socrates is essentially a rational animal. What it is to be a rational animal is not, however, the same as what it is to be a plant. On this basis, then, Aristotle can argue for the non-univocity of life (**NUL**):

1 For living things, to be is to be alive.
2 Thus, for any given living being, its essence is identical with its being alive.

3 The essence of Socrates is not the same as the essence of a crab-apple tree.
4 Hence, Socrates' being alive is not the same as a crab-apple tree's being alive.
5 If (4), *life* is non-univocal as applied to Socrates and a tree.
6 Hence, *life* is non-univocal across the applications.

(**NUL**-1) is the distinctive claim in this argument. If we grant it, along with the commitment to divergent essences for different sorts of living beings, *life* will prove non-univocal. For once we have (**NUL**-1), which suffices for (**NUL**-2), then the remaining premises and interim conclusion flow readily.

Why grant (**NUL**-1)? Aristotle does not provide an independent argument for this claim, though the language of the passage in which he offers it strongly suggests that he is drawing upon his theory of form as substance, as it is advanced in *Metaphysics* vii 17.[5] In that chapter, we find Aristotle arguing that form is substance because form is the cause of being, where the *being* in question is not merely existence, but being one sort of thing rather than another. The presence of the form of a house makes so many bricks a house; had a different form been present to them, say the form of a fence, those same bricks would not have been a house, but a fence. So, the form is the cause of *x*'s being *F*, where *F* is the kind of thing *x* is. With that commitment to form as substance in view, Aristotle now suggests that it is the presence of a form of a certain sort which makes Socrates a human being, and not merely a living being, just as the presence of a different sort of form makes Pavlov a dog, and not merely alive. It is not that Pavlov is first a dog and then living, or that Socrates is first a human being and then, as an afterthought, alive. On the contrary, being a dog is one way of being alive and being a human is another. Each living being is a single, unified entity realizing an essence appropriate to its kind. Since, however, accounts of the essences of different kinds diverge, so too, contends Aristotle, will the forms of life (cf. *Top*. 148a26–31).

More will need to be said about that argument before its failure or success can be finally determined. Still, if it does succeed, then

the job of reviewing the applications of *life* across a range of living things becomes that much easier; for if we must struggle to establish non-univocity, then we might often, if not always,[6] expect that to be due to a closeness across the range of applications of the predicate under consideration. In this case, a clue to Aristotle's attitude towards the core of life emerges in his contention that the soul is not only the formal and moving cause of the body, but its final cause as well (*DA* 415b8–14). If the soul is the final cause of the body, then the activities of the body are for the sake of the soul. If that sounds initially alien, as a first gloss, it is simply the thought that the organs of the body are suited for the activities of life. Now, the activities of life manifested by a plant are unlike the activities of life found in the case of animals, whether rational or non-rational. For instance, since an apple tree does not have perception, it lacks the organs necessary for this activity. Instead, it has root systems and foliage dedicated to the tasks of growing and reproducing. In Aristotle's way of thinking, if we know what plant life consists in, then we can expect plants to be structured so as to execute the functions associated with that sort of life.

Now, at the other end of the Aristotelian spectrum of living beings is God, the living unmoved mover whose activity consists in pure, unalloyed thinking. This being's hypothesized activities, which are purely intellectual, seem in one way far removed from those of a plant, but in another way not. They are far removed insofar as plants do not think and God does not eat. Still, they are similar insofar as they are both *end-directed*. In God's case, the end of thought is truth; in the case of plants, the end of nutrition and generation is the perpetuation of the species by the propagation of others of the same kind. The bare fact of *directionality* is evidently the core of life: a living system is an intrinsic teleological system engaged in spontaneously pursuing its good and the good of its kind. Living beings are *intrinsic* teleological systems, since plainly artefacts can have ends (can-openers are for opening cans), but they are non-living. That presents no difficulty since we regard them as having been given their ends extrinsically. A can-opener, like any other artefact, is given its function by us. Artefacts are for our purposes, not their own.[7]

The second feature of this definition requires that living systems engage in their activities *spontaneously*. This clause seeks to reflect Aristotle's suggestion that living beings have an internal source (*archê*) of change. Again, while many things move, only some things are self-movers. If, let us suppose, we are now sufficiently comfortable with the prospect of self-moving automata that we have no difficulty in thinking of them as *bona fide* self-movers, then we should not immediately conclude that we have superseded Aristotle's approach to living systems. For if they have sufficient complexity, we might well come to regard such beings as living. Minimally, if we are intransigent on this point, then we will owe Aristotle a compelling reason for insisting that such creations *cannot* be alive. That they are made of silicon, for example, should prove by itself unimpressive. It is, after all, a direct consequence of Aristotle's teleological framework that living systems are compositionally plastic.

Perhaps, though, there is another sort of danger for Aristotle, one lurking in his teleological framework. One might, if convinced by the defence of his view mounted so far, come to be so convinced as to accuse Aristotle of being too successful for his own good. After all, this sounds like a perfectly univocal definition:

- x is a living system $=_{df}$ x is an intrinsic teleological system spontaneously engaged in pursuing its own good.

Perhaps, then, we should reconsider (**NUL**), Aristotle's argument for the non-univocity of life. Aristotle's immediate response to this sort of objection may be, as he sometimes suggests, that 'homonymy creeps in unnoticed' (*Top.* 107b6). He may respond in this instance, that both *good* and *teleological system* differ across the range of living beings. God's good is unlike the good of a porcupine, which is in turn unlike the good of a turnip; consequently, the directional processes effected by these diverse life forms are so disparate that it would be wrong to treat them as all belonging to a single kind. If that is so, then despite the similarities we see in all living beings as end-directed systems, we should yet resist treating life as admitting of a univocal analysis.

One may find this sort of rejoinder unpersuasive. To the extent that this is so, however, the resistance seems, according to the current dialectic at least, to result largely from the force of teleological explanation in this realm. That is, if the objection is to be that life admits of a second-order teleological analysis, then that seems due only to the presence of an initially overlooked functional similarity.[8] Of course, there remain other challenges to both this form of univocity and to accounts of life given in terms of core-dependent homonymy. Minimally, however, Aristotle's treatment of life and living systems provides a framework within which serious reflection on these topics may proceed.

7.3 THE SOUL: AGAINST REDUCTIVE MATERIALISM AND SUBSTANCE DUALISM

Despite his commitment to the non-univocity of life, Aristotle thinks he can provide a common account of the soul across all living systems. The account offered makes ready use of Aristotle's hylomorphism; and his contention that soul is a substance as form appears as a direct application of the theory of substance found in the mature middle books of his *Metaphysics*. Because it is both highly nuanced and represents an attempt to respect the broadest range of phenomena possible, the account of the soul advanced by Aristotle resists easy interpretation.

The first and best way to approach it is to consider alternative views sometimes thought to be mutually exclusive and exhaustive: reductive materialism and substance dualism. In keeping with his commitment to survey the most prominent and promising views of his predecessors,[9] Aristotle considers several in the first book of his *De Anima*. Before Aristotle, one finds a range of approaches to the soul. At one extreme we find *materialists*, who suppose that since only basic material elements exist, the soul must be identified with either some or all of them (or, failing that, eliminated altogether),[10] and at the other extreme we find Platonic dualism, which holds the soul to be an immaterial entity capable of existing beyond the demise of the body in which it is housed, or rather imprisoned, during this life (*Phaedo* 62b–c, 64c–d, 67c–e).

According to *reductive materialism*, souls do exist, because they are identical with elements, or configurations of elements; trivially, in consequence, when those elements or configurations cease to exist, the soul ceases to exist. It is instructive, by way of comparison, to reflect upon the treatment of *persons* in some parallel contexts. The materialist holds that a person is identical with his body, or with a part of his body, presumably his brain and central nervous system. By contrast, dualism of the sort espoused by Plato holds, in a manner congenial to some later Christian thinkers, that persons and bodies are distinct entities, such that a person may carry on after the demise of her body. In its Cartesian formulation, the person is a soul, and a soul is an immaterial substance while the body is a material substance. They are thus two distinct beings, conjoined only causally. Although he does not commit himself overtly to this sort of two-substance Cartesian picture, Plato's talk of being distinct from his body and leaving it behind at death (*Phaedo* 64c–d) approximates it closely enough.

Plainly, thus described, substance dualism and materialism are incompatible with one another. They are not, however, exhaustive alternatives. This is why Aristotle thinks he can be critical of them both. Neither alternative, he argues, is acceptable. What is wanted is a theory avoiding the pitfalls of each.

Against materialism, he has two complaints. The first is that material systems exhibit features which are not captured by the intrinsic features of their elements, taken individually or in combination. Thus, for example, he urges against a reductive explanation of nutrition that a full account of that process must appeal to more than simple material interactions:

> Fire's nature seems to some to be without qualification the cause of nourishment and growth, since among bodies fire alone is evidently something which is nourished and grows. On this basis, one might suppose fire to be what accomplishes this in plants and animals. Fire, however, is a sort of co-cause, and most surely not a cause without qualification; the cause is, rather, the soul. For fire's growth carries on without limit, so long as there is something combustible. By contrast, for all things naturally

> constituted, there is a limit and a formula of both size and growth. These things belong to the soul, and not to fire, that is to the formula rather than to the matter.
>
> (*DA* 416a9–18)

Although the narrow target intended in this passage is a specific sort of material explanation, the point behind Aristotle's objection is really rather general. There is a fact about living systems requiring explanation, namely that they exhibit limited and patterned growth. Aristotle suggests that simple-minded materialist explanations simply cannot explain this fact. Fire, for example, though it *grows*, as we say, fails to exhibit the limits or patterns we witness in living beings. In this sense, explanations given in purely material terms prove themselves to be explanatorily inadequate.

Now, one may reasonably point as the source of this problem to the impoverished natural science of Aristotle's time. Surely, materialist explanations are not limited to crude appeals to fire and the like. That is fair enough, though there follows a question about whether Aristotle would find this troubling. If the material explanations grow sufficiently enriched that they can account for the facts of structure and limited growth, then, in Aristotle's terms, we have crossed over into formal explanation; and it was never his contention that forms would not have material realizations. On the contrary, this was a driving feature of his hylomorphic theory of substance.

This same theory of substance provides the impetus for Aristotle's second complaint against materialism. His second objection derives from the need for principles of unity that we have seen him advance in *Metaphysics* vii 17 and viii 6.[11] He takes it as established that although material substances have parts, they are not mere aggregates. Suppose, though, that the soul itself has parts:

> What, then, holds the soul together, if it naturally has parts? It is surely not the body; on the contrary, the soul seems rather to hold the body together. At any rate, when the soul has departed, the body disintegrates and putrefies. If, then, something else

> makes the soul one, that, more than anything else, would be soul; but then again one will need to inquire whether it is one or many-parted. For if it is one, why not say straightaway that the soul too is one?
>
> (*DA* 411b6–12)

Plainly this argument draws upon Aristotle's contention that forms are substances, and as such must be simple.

Applied to the soul, the argument becomes an argument for metaphysically simple souls (**SS**):

1 A body is a unified entity, composed of several parts.
2 If it is unified, then it has a principle of unity.
3 If that principle of unity cannot be the body itself, then it must be the soul.
4 Hence, the principle of unity for the body is the soul.
5 The soul itself either has parts or is simple.
6 If the soul has parts, then since it is a unity, it too has a principle of unity.
7 The soul either contains its own principle of unity (by being essentially a unity) or is unified in virtue of some external principle of unity.
8 There is no plausible external principle of unity for the soul.
9 Hence, the soul contains its own principle of unity (by being essentially a unity).
10 If the soul is essentially a unity, the soul is a metaphysical simple.
11 Hence, the soul is a metaphysical simple.

In thinking of the soul as a metaphysical simple, (**SS**-11) need not be understood to advance the thesis that it is somehow ineffable, or without attributes. Rather, it lacks essentially discrete parts, capable of existing after it has been broken up. The soul is, then, unlike a pile of marbles, each component of which carries on as the marble it was once the pile is ended.

Moreover, if (**SS**-11) is correct, then the soul, as unifier of the body, cannot be a material element. First, the soul will not be of

the same kind as the elements, for then the problem about aggregation will simply re-emerge without end. Moreover, as simple, it will be something indivisible and so not continuous, as Aristotle understands matter to be.[12] Accepting (**SS**-1) as a datum, since bodies are unities but do have parts, Aristotle infers (**SS**-2), that there is a principle of unity, presumably on the grounds that he is unprepared to accept unity as a primitive and utterly inexplicable fact about bodies. Presuming that the soul is the only plausible principle of unity available, Aristotle asserts (**SS**-3) and then wonders whether the soul itself will be simple or not.

From there, the argument proceeds apace until we reach its most contentious claim, (**SS**-8), the claim that there is no plausible external principle of unity for the soul. Aristotle's reason for supposing this seems to be as follows: if the principle of unity for the soul is external, then either we will eventually come to bedrock by identifying some entity which is essentially a unity and in need of no further principle of unity or the process of unification carries on to infinity. The process cannot, however, carry on to infinity. Now, we have seen Aristotle arguing in this sort of way before, in connection with the unmoved mover,[13] where the principle invoked proved unexpected and difficult to assess. Here the point seems rather more straightforward: unifying is a function, and the execution of a function cannot be deferred indefinitely. That is, if the night manager hires a custodian to sweep the floor for £10, who then sub-contracts the work to someone willing to do it for £5, who in turn finds someone prepared to do it for £2.50, and so on without end, then it may appear that the floor will never be swept. If this is Aristotle's contention, then his view is that there must be a grounded, executed task, namely the unifying of elements into something more than an aggregate. In this connection, it will be clear that we will once again be asked to consider the possibility of actually executed infinite processes in the natural world.[14]

Now, if we are on some such basis prepared to allow that the process of unifying cannot carry on to infinity, we are left with two options, as (**SS**-7) suggests: either the soul will be an essential unity or there will be some principle external to the soul,

serving as its principle of unity. Aristotle does not argue directly that it is impossible for there to be an external unifier for the soul. Instead, he relies upon the thought that any such appeal would be idle. That is, once we have distinguished form from matter, and identified the soul as the form, then we already have a principle capable of supplying unity, namely the form. It would therefore be an unnecessary postponement to propose some further principle. In this respect, Aristotle regards himself as justified relying upon his argument for the priority and simplicity of form in *Metaphysics* vii 17 (*Met.* 1041b11–31).[15] If that argument is compelling, then it is perfectly appropriate for Aristotle to appeal to it. This is, after all, one advantage to treating the soul as a form.

Once we appreciate the unifying character of the soul as form, we can grasp the anti-materialist purport of Aristotle's argument: if we accept that animals and their bodies are unities and not mere aggregates, then something must explain that fact, something which the elements themselves, individually or in combination, are ill-suited to do. Thus, along with Aristotle's first anti-materialist argument, (**SS**) looks to the soul as an ineliminable principle, as a principle not reducible to the material elements which constitute the body.

Aristotle's rejection of materialism may cause alarm. If he is not a materialist, one may suppose, then he must be some form of dualist; and if he is a dualist, then his position must be still more untenable than the reductive materialism he derides as explanatorily inadequate. At any rate, dualism carries commitments many find challenging and others regard as bordering on the incoherent. As its critics view it, dualism is extravagant, in appealing to occult, permanently undetectable immaterial entities, and inexplicable, in its commitment to an impossible casual interaction between fundamentally distinct kinds of substances.

Aristotle does not see the terrain in these terms. On the contrary, he will insist, hylomorphism provides no impetus for dualism thus characterized, where this is the view that the soul and body are distinct substances capable of existing independently of one another. For the rejection of reductive materialism is by itself insufficient for substance dualism. All that is warranted thus far,

suggests Aristotle, is an appeal to formal causation. An appeal to formal causation is, however, in no way tantamount to dualism. This can be best appreciated by reflecting on the fact that artefacts, no less than living beings, require formal explanations. Let us grant that no pile of bricks taken by itself is sufficient for the existence of a house. Let us further grant that what is needed is a principle of a sort other than the bricks themselves, and that this principle is the form of the house. Now the question arises: is dualism true for houses? The simple answer: certainly not. The simple answer is the simple answer it is because we have defined dualism as the thesis that souls and bodies are distinct substances capable of existing independently of one another. The analogue in the house will be, then, the matter, or bricks, and the form of the house. Plato thinks that when he dies, he leaves his body behind as a parolee walking out of a prison. Where, though, should the form of a house go? It goes nowhere. It ends, when the house is no more.

Putting his point slightly more abstractly, Aristotle has argued that an appeal to formal causation, though necessary, is insufficient for substance dualism. For substance dualism carries with it a commitment to the autonomous and independent existence of two discrete substances which are joined, only accidentally, during the course of a life, but which may go their separate ways upon their mutual separation at death. Aristotle denies that hylomorphism has any such commitment: the soul is not separable from the body (*DA* 413a3–6).

These considerations jointly express Aristotle's attitude to the relation between reductive materialism and substance dualism. Each side is both right and wrong, and it is instructive to understand how each has something of value to contribute. The materialists were right to think that psychological processes involved bodily states, but wrong to suppose that those processes could be fully explained by appeal to the elements and their features. Something more is needed. What more is needed, Plato rightly saw, was an appeal to form. So Plato was right to reject reductive materialism. Still, Plato inferred incorrectly, and with undue haste, that a rejection of eliminative materialism would

suffice to establish substance dualism. It does not. All that is really needed, according to Aristotle, is an appeal to formal causation. And though forms are indeed substances, it does not follow that souls and bodies are distinct substances capable of existing without one another. As we have seen, the matter, as potential, comes to be actual, when and only when the soul, as what makes something potentially *F* actually *F*, is present in the matter. The result, then, is not two distinct substances, but one actually enformed hylomorphic compound.

7.4 THE HYLOMORPHIC ANALYSIS OF LIVING BEINGS

It is easy, and correct, to insist, as Aristotle does, that reductive materialism and Platonic dualism are not exhaustive options. What is not so easy to effect, however, is a position which captures what is right about each without unwittingly lapsing into one or the other. Aristotle seeks such a *tertium quid* as a middle way between these two extremes in advancing his hylomorphic analysis of soul and body. When Aristotle rejects the views of his predecessors, he does so largely on the basis of constraints he regards their theories as failing to respect. It is now fair of them to demand in turn that he show how the theory he produces succeeds where they have failed.

The rudiments of the theory are already in view:

> It is necessary, then, that the soul is a substance as the form of a natural body which has life in potentiality. But substance is actuality; hence, the soul will be an actuality of a certain sort of body.
>
> (*DA* 412a 19–22)

Aristotle applies his hylomorphic theory of substances to the relation between soul and body. So, the following analogy obtains:

soul : body : : form : matter : : actuality : potentiality

Thus, we have Aristotle's statement of his alternative to both reductive material and Platonic dualism.

The theory may best be understood and tested by considering what Aristotle advances as its two main implications. First, he infers that soul is *inseparable* from the body:

> Therefore, that the soul is not separable from the body, or some parts of it if it naturally has parts, is not unclear. For the actuality of some parts belong to the parts of the body themselves.
>
> (*DA* 413a3–5)

Second, Aristotle concludes that a question which obsesses reductive materialist and dualist alike may be safely set aside. We need not worry about the question of whether soul and body are one:

> Consequently, it is not necessary to ask whether the soul and body are one, just as it is not necessary to ask this concerning the wax and the seal, nor generally concerning the matter of each thing and that of which it is the matter. For while *one* and *being* are meant in several ways, what is properly so spoken of is the actuality.
>
> (*DA* 412b6–9)

Both the *inseparability inference* and the *unity inference*, as we may call them, are in some ways initially unsurprising. Still, upon a closer examination each proves to be less straightforward than may first appear.

Considering first the inseparability inference, we may initially take it as a straightforward consequence of soul–body hylomorphism. As we have seen, the bare existence of a formal explanation does not suffice for dualism. So much is fair enough. Still, we would be mistaken if we were to infer on that basis alone that the soul is inseparable from the body. That is, to argue that formal causation is not sufficient for separability is not yet to say that it is sufficient for inseparability. Having a valid passport from Great Britain is not sufficient for visiting Brazil, since one also needs a visa to do so; but it does not follow that someone with a passport *cannot* visit Brazil, since other conditions, namely the possession of a valid visa, provide the needed sufficient condition.

It may seem that Aristotle has argued erroneously, then, and is guilty of just the sort of overreaching he laid at the door of the Platonist. That would be a mistake, however, since a careful reading of the passage shows that he does not actually state the inseparability inference often ascribed to him. What he in fact says is something less definite and more perplexing. After suggesting that the soul is not separable, Aristotle provides as his reason for maintaining this that it is the actuality of some bodily parts. He immediately adds, however: 'Even so, nothing hinders some parts from being separable, because of their not being the actualities of any body' (*DA* 413a6–7). So, there is more texture to his position than may first appear. On the one hand, he expressly reserves the possibility of the separability of some parts of the soul, on the grounds that they may not be the actuality of any body. He is, evidently, thinking of reason, which he will ultimately argue lacks a bodily organ altogether.[16] At the same time, we should be perplexed, since earlier he had argued that the soul was metaphysically simple. Now, this is not yet a contradiction, since something may be simple in one dimension and complex in another (as a phoneme is simple as contrastive unit of spoken sound, but complex as a pattern of waves in the air). That allowed, one may reasonably expect Aristotle to supply the relevant dimensions.

Matters are similar with his second major inference from hylomorphism, the unity inference. Again we have an initially unsurprising application of hylomorphism. If the soul as form is actuality, and the body as matter, potentiality, then the resulting compound should be, in line with the reasoning of *Metaphysics* viii 6,[17] some one thing, in this case some one animal or plant. Just as the wax and the form of a wax stamp are not two distinct things, so a soul and body are not two distinct things. Again, however, our expectations are only partially fulfilled; learning only so much about unity does not tell us all we need to know.

To begin, one may press a point left unpressed in our discussion of *Metaphysics* viii 6.[18] We may approach this point by noting a simple matter of Aristotle's language. He does not say, as he is often represented as saying, that *it is necessary not to ask* whether the soul and body are one; rather, he says something gentler, that *it is*

not necessary to ask whether the soul and body are one. Now, one may immediately wonder about the backdrop to this contention. If it were the more strident claim (which is linguistically possible, but likely incorrect), one might be inclined to take umbrage and demand an explanation: *why* is it necessary not to ask this question? On whose authority might we be instructed to forbear asking what we might well otherwise want to ask. If a friend tells me that I had better not ask who is in my bedroom with my wife, then I understand the tendency of his remarks. If, though, someone insists that I cannot ask how much I am to be paid for a job I am about to undertake, then I am inclined to ask why I cannot ask such a thing. Accepting the preferable and more likely translation of Aristotle's remark, we find ourselves in a more nuanced dialectical situation. Here we are inclined to ask only why it might have seemed necessary to ask this sort of question in the first instance. Thus, a friend might inform you that it is not necessary to meet her at the zoo, but unless you were expecting to do just that, you would likely find her remark puzzling. What is more, we certainly might wish many sorts of things which we admit are not strictly necessary. It is not necessary to have a lovely dessert after dinner, but one may want to do just that nonetheless. Closer to home, it is not necessary to inquire into the ratio of herbivores to carnivores among the dinosaur genera. Still, many fine palaeontologists have spent careers on the question, and often to good effect. So, again, it is unclear precisely what Aristotle has in mind in drawing this sort of inference.

One possibility, though it is conjectural, is that the *unity inference* and the *inseparability inference* are connected for him. That is, Aristotle may merely be advising against the sort of overreaction he saw in Platonic dualism. His thought might then be that since reductive materialism is untenable, and to be rejected in favour of hylomorphism, the question naturally arises as to whether the soul is separable from the body. Since, however, hylomorphism by itself provides no reason to suppose that the soul is separable from the body, the question one might naturally ask in this connection is idle. For this is at least in part precisely the question of whether the soul and body are one. Thus, if one had no reason to maintain

that the soul is separable from the body, as substance dualism contends against reductive materialism, then one would indeed have no need to inquire into the question of whether soul and body are one. Once the middle way of hylomorphism is uncovered, that question no longer remains pressing. The question of unity does not arise, and is in this sense not necessary. If hylomorphism provides no grounds for separating the soul from the body, then the impetus for asking about unity dissipates: soul and body need not be separable from one another even if they are not one. While it is true that the soul, as form, is not one and the same thing as the body, as matter, when the soul informs the body they nonetheless yield one being in actuality, a living being, namely an animal or plant.

This last suggestion leads to a second observation about Aristotle's unity inference. In view of it, we can at last legitimately pose a question left unexplored in our discussion of *Metaphysics* viii 6, the chapter upon which the unity inference seems to be drawing. There Aristotle said somewhat cagily that form and proximate matter are 'somehow' (*pôs*) one (*Met.* 1045b21).[19] How, precisely, are they somehow one? If we rely on Aristotle's illustration regarding soul and body in *De Anima*, we might be inclined to say that soul and body are not one, but two. After all, the shape of a candle and its wax are not one thing, but two: the wax is a quantity of stuff and the shape is a structural feature. A stuff is not a feature and a feature is not a stuff. In terms of the scheme of the *Categories*,[20] the wax is a quantity and the feature a quality; but, again, quantities and qualities are distinct and mutually exclusive sorts of beings.

Moreover, moving away from categorial considerations, we have seen that organisms and artefacts can sustain material replenishment while remaining one and the same. Since their essential forms remain unchanged while their matter varies, it follows that their matter and form cannot be identical and so cannot be one. Hence, the sense in which they are one requires explication. Note in this connection that the easy gloss that they come together to form one thing falls short of claiming that they *are* somehow one. The unity inference is thus less innocent than it may first appear.

7.5 A PROBLEM FOR SOUL–BODY HYLOMORPHISM

In these ways, Aristotle's first two inferences regarding soul–body hylomorphism, the inseparability and unity inferences, prove alternately attractive and challenging. A third consequence of hylomorphism proves still more challenging. If it can be successfully met, Aristotle's theory will have still more to commend it. This is Aristotle's surprising claim that the unensouled body is only homonymously a body:

> It has now been said in general what the soul is: the soul is a substance corresponding to the account; and this is the essence of such and such a body. It is as if some tool were a natural body, e.g. an axe; in that case being an axe would be its substance, and this would also be its soul. If this were separated, it would no longer be an axe, aside from homonymously. But as things are, it is an axe. For the soul is not the essence and structure of this sort of body, but rather of a certain sort of natural body, one having a source of motion and rest in itself. What has been said must also be considered when applied to parts. For if an eye were an animal, its soul would be sight, since this would be the substance of the eye corresponding to the account. The eye is the matter of sight; if sight is lost, it is no longer an eye, except homonymously, in the way that a stone eye or painted eye is.
>
> (*DA* 412b10–21)

We have seen Aristotle's various appeals to homonymy elsewhere,[21] in connection, for example, with this introduction of the science of being *qua* being.[22] In the present case, as his language makes plain, he is suggesting that a dead body is a body *merely* homonymously – that is, that a dead body is not properly speaking a body at all. That is surely counterintuitive; what is more, it threatens a serious problem for Aristotle's entire hylomorphic analysis of soul–body relations.

A claim that a dead body is not really a human body seems counterintuitive in the extreme, at least from a narrowly linguistic

perspective. After all, we call a corpse a body. Presumably, Aristotle is aware of this much. This is why he attempts to illustrate his point by cases where we readily apply words we know to apply only by extension or courtesy. If eyes are for seeing, then, one might infer, if a statue has an eye, it must have an organ for seeing. Obviously, this is incorrect; but then it is also incorrect to say, strictly speaking, that statues have eyes. Of course, not all speaking is strict speaking. Thus, Aristotle is happy to say that statues do have eyes – so long as we bear in mind that they have eyes only homonymously. Further, his reason is clear. Such eyes lack the defining features of eyes, and thus are not members of the functionally defined class of eyes. By extension, then, he is arguing that the same holds true of bodies. A human body is a living organism, capable of growing and perceiving; when a given lump of matter lacks these abilities, it is no longer a member of the relevant functionally determined kind. Hence, a dead body is a body only homonymously.

Perhaps so much will soften the linguistically counterintuitive result. After all, Aristotle is not demanding that we quit referring to corpses as bodies any more than he is insisting that we cease referring to the Mona Lisa's mouth as a mouth. Rather, he is encouraging us to bear in mind that when precision matters, as in philosophical contexts, we should not be led astray by comfortably entrenched linguistic patterns. That said, there is a more consequential concern about Aristotle's appeal to homonymy. We initially modelled hylomorphism on the model of a bronze statue.[23] Now, a quantity of bronze might come to be Hermes-shaped, but then might be melted and recast with a Pericles-shape. All the while, the same quantity of bronze underlies the acquisition and loss of form. So, a quantity of bronze is only *contingently* Hermes-shaped. When it loses its Hermes-shape, a quantity of bronze is not merely homonymously bronze. It remains the bronze it ever was. By contrast, we are now told, a human body ceases to be a human body when it loses its soul. Hence, it must be essentially ensouled. If the soul is a form, as Aristotle contends, it is hard to appreciate how this might be so. Hence, we have a *homonymy problem* (**HP**):

1 Matter is only contingently enformed by form.
2 Hence, if the body is the matter of the soul and the soul is the form of the body, then the body is only contingently ensouled.
3 The body is the matter of the soul and the soul is the form of the body.
4 Hence, the body is only contingently ensouled.
5 Yet, if a body which has lost its soul is only homonymously a body, then that body is essentially ensouled.
6 A body which has lost its soul is only homonymously a body.
7 Hence, the body is essentially ensouled.
8 Hence, the body is both contingently and essentially ensouled.
9 If (8), then soul–body hylomorphism is incoherent.
10 Hence, Aristotle's soul–body hylomorphism is incoherent.

(**HP**-10) represents serious trouble for Aristotle's soul–body hylomorphism. It appears that he has now overextended his hylomorphism, with disastrous results. If the soul is the form of the body, then the body is only contingently ensouled; yet if a body is a body only when ensouled, then the body is not contingently but essentially ensouled. So, the body is both contingently and essentially ensouled; and that is a contradiction in terms.

When confronted with this obvious problem, scholars have taken a number of routes, ranging from attempts to reject one or another premise to accepting its conclusion outright and rejecting soul–body hylomorphism. Some might wish to advise Aristotle simply to retract (**HP**-6). As it turns out, it would be difficult for him to do so;[24] and in any case, he does assert it directly. Hence, it is worth pursuing other strategies. If we work back through the argument each premise looks unassailable.

Perhaps one place to put pressure on the argument is to return to the beginning. It is true, of course, that (**HP**-1), the claim that matter is only contingently enformed, seems a direct consequence of Aristotle's initial introduction of hylomorphic analysis. The bronze of a bronze statue does seem indeed contingently enformed. Still, that is because we are operating with the notion of form in a thin and anaemic sense, as roughly shape or structure. As Aristotle has developed his notion of form into something

more robust, as what provides the essence and actuality of the entity whose form it is, the metaphysics of form have grown correspondingly complex. Importantly, by the time we have come to consider the forms of living organisms, we have seen the need to think of forms as *prior* to the matter whose forms they are. That is, Aristotle has argued that a body as a diachronic continuant capable of sustaining material replenishment has its identity conditions parasitic upon the soul whose body it is.[25] If that is so, however, then (**HP**-1) seems overly general, to say the least. For if the body, considered as a diachronic continuant, is parasitic for its identity conditions on the soul whose body it is, then it will not even be possible to identify it independently of the soul. A consequence would seem to be that once we have introduced the more robust conception of form, as an essence capable of providing the identity conditions of the proximate matter whose form it is, the form will be essential to the matter – that is, to the *proximate matter* whose form it is. More would be needed to show this strategy successful, but it at least provides a way of showing how Aristotle's hylomorphism is coherent and may thus be judged on its remaining independent merits, whatever they may be.

Central among those merits is intended to be the thought that hylomorphism should chart a middle course between reductive materialism and full-blown substance dualism. If it succeeds here, then it seems reasonable to investigate its further philosophical credentials. In any event, if dualism has appeared untenable to many, no attempt to forge a reductively materialistic alternative to supplant it has yet succeeded in establishing itself as orthodox. Something in the way of Aristotle's middle way may yet prove a suitable compromise.

7.6 PERCEPTION AND THOUGHT

Having explained soul–body relations in hylomorphic terms, Aristotle deploys the same framework in his bid to explain perception and thought. In each case, Aristotle's hylomorphic explanatory framework proves simultaneously fruitful and vexing. In the case of perception (*aisthêsis*), Aristotle's theory has proven

controversial at the level of interpretation. Moreover, in order to deploy hylomorphism, Aristotle needs to adapt and develop his basic framework to account for the phenomena as he understands them. In the case of thought (*noêsis*), Aristotle's hylomorphism seems stressed almost to the breaking point. Still, in each case, Aristotle's analyses inherit whatever explanatory benefits his overarching explanatory framework can offer.

The crucial observation underlying Aristotle's treatments of perception and thought is simple: perception and thought are kinds of change (*kinêsis*). Consequently, each is explicable in the terms provided by Aristotle's general hylomorphic theory of change, which is given in terms of *form reception*.[26] Still, perception and thought are special kinds of change; not every change is an instance of perception or thought. On the contrary, since the universe divides into the living and the non-living, and the living comprise a hierarchy of psychic abilities, only animals, including human animals, are the subjects of the sorts of changes we find in perception. The question for both perception and thought may accordingly be posed thus: what is the distinctive feature of a given change which makes it an instance of perception or thought? A fence changes when it is painted white, but it does not perceive its alteration. A nosy neighbour watching the progress of the painter painting her neighbour's fence changes as well, insofar as she perceives the fence's becoming white. Later, before bed, when she thinks, 'Perhaps I should have my fence painted as well – otherwise my fence will be the dowdiest on the block', she changes again. Her late-night change is not a case of perception, but of thought. What is special about each of these changes such that the one qualifies as an instance of perception and the other as an instance of thought?

Turning first to Aristotle's account of perception, we find Aristotle situating his theory in its hylomorphic context: 'Perception consists both in being moved and in being affected, just as was said; for it seems to be a kind of alteration' (*DA* 416b32). It is not however, just any kind of alteration. Rather:

> Perception is the reception of perceptible forms without the matter, as wax receives the seal of a signet ring without the iron

> or gold. It acquires the golden or the metallic seal, but not insofar as it is gold or metal. In a similar way, perception is also in each case affected by what has the colour or taste or sound, but not insofar as each of these is said to be something, but rather insofar as each is of a certain quality, and corresponding to its proportion (*logos*).
>
> (*DA* 424a17–24)

Further, perception consists in an organ's being made like the object it perceives (*DA* 418a3–6, 424a17–21). The claim that in perception a subject receives the form in a manner corresponding to its proportion (*logos*) is initially a bit opaque. Aristotle means that each colour, for example, is a certain ratio of black and white, placing it along a colour spectrum. We may thus think of colours as mixtures of a sort, expressible abstractly by the ratio of one elemental colour or another. Although this suggestion may be a bit alien, the idea is continuous with what occurs in a paint shop. A colour swatch is given to a paint mixer who follows a specified recipe, say four parts red, two parts blue, and so on, in order to produce the wanted shade of lavender. The recipe provides the proportion or ratio of elemental colours. Now, to receive the form considered as a proportion or ratio is, according to this model, simply coming to have the ratio realized in the sense organ without the matter of the object perceived. The wood of the fence remains where it was, but the ratio of its colour informs the perceiver. For convenience sake, we can say simply that the perceiving subject becomes *isomorphic* with the sensible quality.

Taken together, then, Aristotle's account of perception takes the following form:

> *S* perceives some sensible object **o** $=_{df}$: (i) *S* has the capacity *C* requisite for receiving **o**'s sensible form *F*; (ii) **o** acts upon *C* by enforming it; and (iii) *C* becomes isomorphic with **o**'s sensible form in being itself *F*.

To illustrate, Mrs Nudnik, having a fully operative perceptual faculty, stands before a fence in the process of being painted. She

is acted upon by the colours and motions in her visual field in such a way that they cause her sensory organ to be made isomorphic with the colour of the fence. Thus she perceives white.

Now, one easy and welcome result of this definition is that it shows how perception differs from motion taken generally. The first clause (i) requires that the perceiver have a capacity for receiving sensible forms. Fences lack this capacity and hence do not perceive themselves being painted white. Unfortunately, as with most easy results, so much merely postpones the difficult question. For one will now want to know what it is to have a capacity for receiving sensible forms. If we answer directly that it is simply to have a perceptual faculty, then what we say will be true but no more informative. It will, in fact, render Aristotle's definition immediately circular.

What really matters for the definition revolves around (iii), the clause that the perceiver becomes isomorphic with the object. Two very different interpretations have been developed with respect to this clause. The first in effect takes a limiting case of isomorphism and understands Aristotle to understand form transference altogether literally.[27] According to this view, when Aristotle says that the perceiver receives the form, he means just that: the eye, or the pupil, becomes white when we stand before Malevich's *White on White*. If the physiology is primitive, then at least the theory of form reception is clear. Aristotle simply believes that perception involves form reception, understood as literal exemplification, by a creature capable of perceiving. There is nothing more to say than that. Of course, the theory is then impoverished, and difficult to credit empirically. Moreover, it leaves something crucially unexplained. If perception involves detection and awareness, and someone capable of perceiving can have her organs affected without perceiving, as when a distracted person fails to notice a blue ball directly in her visual field, then we seem to have a case of form reception without perception. It will not do, of course, to respond that what is missing is perception.

Proponents of this literalist interpretation can respond to these objections in various ways, in some cases by revisiting the alleged *explananda*. That is, perhaps we should not concede so readily that

perception involves awareness, since we do perceive plenty below the threshold of conscious awareness. In some sense, however, this sort of response begins only to refocus our attention on Aristotle's original conception of perception. He does not say, in precise terms, what data he hopes to capture in his theory. It is little comfort, perhaps, but nonetheless true, that one finds the same dialectic at play in contemporary discussions of perception. Philosophers disagree, for example, about the existence of so-called non-conceptual content to perception;[28] upon inspection, however, it becomes clear that some who deny the existence of such do not deny the phenomena which proponents take themselves to affirm. In the current context, this serves to remind us that when we come to interpret Aristotle's theory of perception, we need to reflect, so far as his texts permit, on the character of his quarry.

That caution in place, it is possible to approach (iii) in an altogether different light by treating isomorphism not literally but *intentionally*.[29] That is, one might suppose that (iii) invokes isomorphism simply in terms of sameness of structure, and not in terms of literal property exemplification. The idea here corresponds to the way in which a new synagogue, a scale model used for fund-raising before the temple was built, and a two-dimensional blueprint are isomorphic. Although neither a blueprint nor a model is itself a (non-homonymous) synagogue, each is isomorphic with the other. Importantly, the blueprint represents the building though it is in a two-dimensional medium. In this way of thinking of perception, the perceiver comes to perceive the object not by realizing the sensible quality, but by coming to be in a state representing it, by manifesting an isomorphism caused to occur by the object perceived. Thus, the eyes do not become crimson when a perceiver views a Mr Lincoln hybrid tea rose; nor do the ears become somehow cacophonous when listening to Shostakovich's ballet *The Age of Gold*. Rather, one comes to share the structure of these objects, without exemplifying them. Certainly, this seems preferable to supposing that the ear, or inner ear, somehow exemplifies sounds by emitting noise.

Still, some of the same questions advanced against literalism are justly posed against intentionalist interpretations of isomorphism

as well. Is it possible to become isomorphic with an object of perception without perceiving? If so, intentionalism would be liable to the very complaint lodged against literalism. What more is needed in addition to isomorphism for perception to accrue? Moreover, the notion of isomorphism itself stands in need of explication, even if the notion of blueprints and the like provide a reasonable first approximation. In these way, at the very least, Aristotle's theory of perception stands in need of further refinement and development. That said, it seems fair to conclude that hylomorphism provides a reasonable framework for conducting further discussion. Nothing about the interpretative problems canvassed tends to undermine the framework itself. On the contrary, since perception does seem to involve change, we are right to begin our analysis by wondering about the precise kind of change perception might be.

Matters become more complex when we turn to Aristotle's theory of thinking. Here we find him expressly augmenting hylomorphism in an effort to come to terms with the fact that the change involved in some kinds of thinking is not readily modelled in the standard, or base-case, way. Aristotle begins, unsurprisingly, by drawing an analogy between perception and thought:

> If thinking is akin to perceiving, it would consist in being somehow affected by the object of thought or in something else of this sort. It is necessary, therefore: that it be unaffected, yet capable of receiving a form; that it be this sort of object in potentially but not be this; and that it be such that just as the perceptual faculty is to the objects of perception, so reason will be to the objects of thought.
>
> (*DA* 429a13–18)

Evidently, then, the same model of form reception obtains:

> A subject *S* thinks some intelligible object **o** $=_{df}$: (i) *S* has the capacity *C* requisite for receiving **o**'s intelligible form *F*; (ii) **o** acts upon *C* by enforming it; and (iii) *C* becomes isomorphic with **o**'s intelligible form in being itself *F*.

Given the direct parallel with perceiving, it will come as no surprise that some of the same interpretive issues regarding perception re-emerge in a new guise in the case of thinking.

Rather than pursuing them, it will prove more instructive to consider two distinctive features of thought, as well as one arresting consequence for Aristotle's general attitude towards soul–body hylomorphism.

The first distinctive feature is relatively unproblematic, though it does exhibit the degree to which Aristotle needs to develop hylomorphism when deploying it in psychological contexts. The base-case account of hylomorphic change works for some cases of thought, but not for others. In the base case, change is effected when one contrary is destroyed and supplanted by another.[30] Thus, a white turtleneck sweater is dyed black by a graduate student as she begins her study of post-modern literary theory. When this occurs, the white is destroyed by its contrary, the black. Similarly, an ignorant but eager philosophy undergraduate learns the paradox of the Russell Set (pertaining to the set of all sets which are not members of themselves). In this case, ignorance gives way to knowledge, in such a way that her ignorance is overcome by knowledge. So far, the intellectual change conforms to the basic hylomorphic model. Now, however, a wrinkle emerges. The undergraduate philosophy student matures, and decides to leave philosophy for post-modern literary theory. As a graduate student, while dying her sweater, she begins to wonder whether she has made the right choice in changing fields: in her reverie, she starts to think once again about the paradox generated by the Russell Set. Surely her thought processes have just undergone a change, but nothing has been destroyed. No contrary has given way to any other contrary. Rather, says Aristotle:

> The one who, after being in potentiality, learns and receives knowledge from one who is in actuality, and a teacher, either should not be said to be affected or there are two types of alteration, one a change towards conditions of privation and the other towards positive states and a thing's nature.
>
> (*DA* 417b12–16)

Aristotle's idea here is to draw upon a kind of change also recognized elsewhere, which involves not destruction, but fulfilment. In this form of change, it is appropriate to speak not only of potentiality and actuality, but of two grades of actuality as well. When someone learns, she moves from potentially knowing to actually$_1$ knowing, whereas when the one who already actually$_1$ knows something, say the Russell Set, comes to contemplate it actively, she actually$_2$ knows it. That sort of change, suggests Aristotle, is not an instance of destruction but rather a movement towards a thing's nature.

That may seem a strong statement, but it is Aristotle's steady view, as we have seen, that 'all humans, by nature, desire to know' (*Met.* 980a1).[31] In the current context, this suggests that human beings, in their very nature, strive to be actively contemplating. A fully mature and actual human being, someone realizing human nature most fully, is someone engaged in actual contemplation. Strikingly, Aristotle will later rely on this metaphysical and psychological fact when reflecting on the nature of human flourishing in his ethical theory.[32]

In the context of his psychological theory, however, Aristotle's conception of the activity involved in thinking has a further striking consequence, one which appears to be far more than an interesting extension of hylomorphism: it is, rather, seemingly at variance with it. He draws attention to the fact, or putative fact, that a thinker can think all things. He means by this that unlike perception, with respect to which individual perceivers are limited because some objects are too intense to perceive without damage and others are beyond the range of perceptible objects, there is no object of thought incapable of being thought. Something about the nature of mind follows, he concludes:

> It is necessary, then, since it thinks all things, that the mind be unmixed, just as Anaxagoras says, so that it may rule, that is, so that it may know (for the interposing of anything alien hinders and obstructs it). Consequently, its nature must be nothing other than this: that it be potential. Hence, that part of the soul called mind (and by *mind* I mean that by which the soul thinks and conceives)

> is none of the things existing in actuality before it thinks; nor is it, accordingly, reasonable for it to be mixed with the body, since then it would come to be qualified in a certain way, either cold or hot, and there would be an organ for it, just as there is for the perceptual faculty. As things are, though, it is nothing.
>
> (*DA* 429a18–27)

It is, to say the least, surprising to learn that the mind is none of the things existing in actuality before it thinks. It is also difficult to understand precisely what this should mean.

Aristotle argues for the *peculiar status of mind* (**PCM**) in this passage as follows:

1 Mind thinks all things (*DA* 429a18).
2 Hence, mind is unmixed (*DA* 429a18).
3 Hence, the nature of mind is nothing other than to be something potential (*DA* 429a21–22).
4 Hence, mind is none of the things existing in actuality before it thinks (429a22–24).

As stated, the argument is a string of inferences, all drawn, with suppressed premises along the way, from a single claim in (**PCM**-1), that mind thinks all things.

Evidently, (**PCM**-1) is simply the claim that mind is infinitely plastic. That is, the mind can, given enough time, think anything which is in its nature intelligible. Of course, we are finite creatures and so do not have enough time to think all things, but that is not a problem for (**PCM**-1). It does not assert that we *do* think all things, but that the mind is such that it *can* think all things. With that in place, Aristotle infers (**PCM**-2) that it must be unmixed with the body, where this entails its lacking an organ (*DA* 429a26), thus rendering the intellectual faculty importantly disanalogous from the perceptual. Some are tempted to regard Aristotle's claim here as an unhappy falsehood born of the impoverished empirical science of his day. Whether true or false, however, it is clear that, for better or worse, Aristotle is not arguing on empirical grounds. As it is inferred from (**PCM**-1),

(**PCM**-2) is introduced as a consequence of plasticity, not as the result of a failed search for an organ of thought.

As the argument proceeds, (**PCM**-4) emerges to challenge the appropriateness of the very hylomorphic framework used to generate Aristotle's account of thought. For (**PCM**-4) holds that the mind is nothing in actuality before it thinks. Let us grant this conclusion. We may do so, only to discover that Aristotle has now dangerously overstrained his hylomorphic apparatus. For the hylomorphic account of change was first introduced in part to combat Parmenidean doubts about the very existence of change.[33] In its original context, hylomorphism held that every change involved a complex, something continuing, for example the bronze underlying the generation of a statue, and something gained or lost, for example a Hermes-shape. Now we learn that the mind does not exist before it thinks. It seems to follow that this is not amenable to hylomorphic analysis, since it is not there to be affected in the first instance in a change. A fence can be painted grey only if it presents an existing surface: a change is effected upon a suitable subject, where, needless to say, a subject is suitable only if it exists.

Taking all that together, Aristotle seeks to explain thinking in hylomorphic terms because it is an instance of a change, and hylomorphism was introduced to explain change. Yet hylomorphism requires the existence of a persisting subject, and the mind cannot persist through a change, since it does not exist in actuality before the change begins. Thus, Aristotle's hylomorphic account of thinking undermines a key feature of the very framework within which it is cast.

If Aristotle is to escape this sort of worry, (**PCM**-4) will, consequently, have to be given a very careful reading. A defender of Aristotle might at this juncture note that Aristotle does not say that the mind exists not at all before thinking, but that it does not exist in actuality, where the clear purport is that it exists in potentiality. That is fair enough, but in one sense only postpones the question. It seems fair to say that *x* exists only in potentiality only if there is some *y* which exists in actuality, and *x* is a potentiality grounded in *y*. Thus, we say that a man is potentially but not actually a

general only if the man actually exists and is such that he can become a general. If that is so, then Aristotle owes an account of what exists in actuality such that it has the capacity which is made something actual only when thinking begins. Note in this connection that this demand is not met merely by saying that the actual thinking begins only when the mind has *its* potentiality to think actualized; for it is *the mind itself* which is said not to exist in actuality before thinking, and not merely, and trivially, that its capacities are not actual before they are actual.

Aristotle has some room to respond here, but it is fair to say that he has now taxed his hylomorphic theory of change almost beyond the limits of recognition. Again, this need not be in itself an objection to his hylomorphic theory of thinking or to hylomorphism more generally. For as the field of explanation expands and grows ever more complex, the framework will prove itself worthy of the task only if it is itself suitably strong and complex. That said, as we assess Aristotle's various applications of hylomorphism, we become aware that the theory does require augmented complexity.

Supposing, as we may, that the theory of thinking and mind will prove to admit of defensible analyses, we may conclude by drawing together two strands in distinct applications of Aristotle's hylomorphism in psychology, to soul and body generally, and to mind more narrowly. Recall that when Aristotle first derived his inseparability inference from soul–body hylomorphism,[34] he appended to his denial of the soul's separability from the body a consequential rider: 'Even so', he said, 'nothing hinders some parts from being separable, because of their not being the actualities of any body (*DA* 413a6–7). It now emerges that due to the mind's plasticity it lacks an organ and so is in fact the actuality of no part of the body. In terms of the logic of the rider, it does not follow directly that Aristotle regards the mind as separable from the body, but he does affirm that it is separable at least in account (*DA* 429a10–12), and suggests that it *may* be in his view capable of immortality. Or rather, he definitely does identify what he calls the *active mind* (*nous poiêtikos*) which he plainly regards as deathless and separate (*DA* 430a22–25). Aristotle's treatment of the active

mind is frustratingly terse, with the result that scholars have differed since antiquity about whether the active mind so characterized is the human mind or rather the mind of God, the unmoved mover described as a living, thinking being.[35] If we accept, as the text of *De Anima* seems to suggest, that Aristotle has the human mind in view, then we must return to his original inseparability inference and qualify it appropriately.

Any such qualification would in turn require that we re-assess Aristotle's attitudes towards his predecessors. He had rejected both reductive materialism and substance dualism in an effort to find a middle path with the defects of neither extreme. His treatment of the separability of the soul, either in whole or in part, perhaps shows the strain of compromise. From both Plato and the reductive materialist we receive a perfectly clear answer to a question about the prospects of *post mortem* existence for human beings. The Platonist says, 'Plainly.' The reductive materialist says, 'Certainly not.' Aristotle's hylomorphism seems to waiver, seeking to straddle both sides of the divide: 'Evidently not. But, then again, perhaps.'

7.7 CONCLUSIONS

In each successive application of hylomorphism – to soul–body relations, to perception, and to thought – we find Aristotle finding innovating and discovering ways to extend and develop his basic philosophical framework. As he develops and augments hylomorphism to handle the rich data of our psychological lives, Aristotle deploys every conceptual tool the theory puts at his disposal. For this reason, it is fair to say that the hylomorphic theory first introduced by Aristotle in the *Physics* receives its most sophisticated and nuanced expression in his *De Anima*. Attempting even to provide an account of life itself, given in terms of the apparatus of core-dependent homonymy, Aristotle proceeds to develop ever more sophisticated treatments of the activities of perception and mind, which have proven rich in their intricacy and, in consequence, controversial in their interpretations and eventual appraisals.

To his credit, Aristotle does not pretend that these matters will admit of easy resolutions. On the contrary, near the beginning of his *De Anima* he observes with a commendable frankness that 'grasping anything trustworthy concerning the soul is completely and in every way among the most difficult of affairs' (*DA* 402a10–11). To the extent that his first engagement with these issues continues to merit careful study, Aristotle's caution bespeaks an admirable awareness of the difficulties inherent in the sciences of life and mind. As will be readily attested by those engaged in contemporary discussion of these issues – whether of perception, meaning, memory, intentionality, consciousness, or mind–body relations – grasping anything trustworthy in this domain does indeed remain among the most abidingly difficult of affairs.

FURTHER READING (* = ESPECIALLY SUITED TO BEGINNERS, IN TERMS OF CLARITY OR ACCESSIBILITY)

Primary Sources

Aristotle, *De Anima* ii, iii 1–11

Secondary Sources

Everson, S., 'Psychology', in J. Barnes, ed., *The Cambridge Companion to Aristotle* (Cambridge University Press: 1995), pp. 168–94

Hamlyn, D. W., *Arisototle: De Anima Books II and III* (with passages from Book I), translated with introduction and notes, with a report of recent work by Christopher Shields (Clarendon Press: 1993)

*Matthews, Gareth '*De Anima* 2.2–4 and The Meaning of Life,' in M. Nussbaum and A. O. Rorty, eds, *Essays on Aristotle's De Anima* (Clarendon Press: 1995), pp. 185–94

*Shields, Christopher, 'Aristotle: Psychology', *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu/entries/aristotle-psychology/)

*Shields, Christopher, 'The Aristotelian *Psuchê*', in G. Anagnastopoulos, ed., *The Blackwell Guide to Aristotle* (Blackwell: 2007)

Eight

Living Well

8.1 THE FINAL GOOD FOR HUMAN BEINGS

Human beings engage in purposive behaviour. We do things for reasons and act with ends in view. Thus, we walk to the store *intending* to buy milk. If asked *en route* by a friend whom we meet on the street why we are walking towards the store, the sensible and correct answer is the true one: 'To buy milk.' If our friend is an amusing sort and begins to regale us with jokes and stories so engagingly that we forget where we had been going and why, then we may find ourselves befuddled, forgetting temporarily what we had been doing and trying to recollect the purpose of our being on the street. If we really cannot recall, then we will no longer walk towards the store, for we shall have no purpose motivating us to do so. When we do recall our purpose, then we resume our activity with a smile upon our face.

Suppose, by contrast, that our friend is not an amusing sort, but a serious-minded philosopher who wants to know *why* we want to buy milk. If we answer seriously and honestly that we want to buy milk for our morning porridge, and he presses on, wanting to know *why* we intend to eat porridge in the morning, then we may well answer that we find porridge healthy and delicious, especially with milk, which we may then excuse ourselves to buy. Insensible of our lack of interest, the philosopher may persist, wanting to know *why* we desire to eat delicious and healthy food. Again, we may respond, that it is because we enjoy delicious food, that eating it brings us pleasure, and that we desire health for the obvious reason that health is good – and, lest it be

asked, we all desire good things for ourselves. If we have not by now slipped away, we may hear the philosopher posing the same question, earnestly let us allow, *ad nauseam*, or at least until such time as we say, with exasperation, that we do all these things we do for the sake of happiness. If now asked *why* we wish to be happy, perhaps rudeness is warranted. We may simply walk away, shrugging and saying that we really must buy our milk.

Although our behaviour is purposive, it seems that such why-questions must leave off at some point. Aristotle finds some significance in these related facets of our behaviour, that we do things for reasons and that our reasons may be subordinated to superordinate reasons until we reach a final and ultimate reason underlying all of our intentional actions. Aristotle opens his *Nicomachean Ethics* with just this commitment, though employing what may seem a disastrous argument on its behalf:

> Every art and every inquiry, and similarly every action and choice, seems to aim at some good; accordingly, the good has rightly been declared to be that at which all things aim.
>
> (*EN* 1094a1–3)

Even if it is true that there is some ultimate good for all human action, this argument, taken at face value, does not deliver that conclusion. For it may be true that every action aims at some end, even though there is no single end towards which all actions aim. After all, every archer aims at a target, though there is no one target aimed at by all archers. If Aristotle argues this way, then he is guilty of a very simple fallacy noting that everything has some feature and inferring on that basis that there is just one feature had by everything.[1]

That said, it may be possible to understand these lines in a manner more favourable to Aristotle, in either of two ways. First, perhaps he is already assuming in the first line that every intentional action aims ultimately at some one end, the good, and then commenting that it is therefore appropriate that some have characterized the good as that at which all things aim.[2] On this way of understanding these lines, Aristotle does not argue fallaciously,

because he does not argue at all.[3] Alternatively, he may be understood as advancing an argument which is not immediately liable to the objection given. Perhaps he means to claim that since every action aims at some sort of end or other, each of which is some sort of good, what these ends have in common is that they are good. Different capitalists market cars, coat hangers, and coffee beans, each aiming for profit in their sector; so profit is rightly called the aim of all capitalists. Similarly, exercise aims at health because heath is good, study aims at knowledge because knowledge is good, and recreation aims at relaxation because relaxation is good. What these different sorts of goods have in common is precisely that they are good. Such an inference requires additional work, and may sit uneasily with Aristotle's scruples concerning the univocity of goodness.[4] Even so, it would not implicate Aristotle in the formal fallacy these lines are often taken to commit.

In any case, if we do agree that purposive actions aim at good ends, or at least at apparently good ends, and if we further agree that these ends may be subordinated to one another such that there is some one final good which all humans seek, we would do well to reflect upon the characteristics we expect this final end to have.

To begin, when asked what their final good is, people will likely disagree. Some people, hedonists, will report truly that they seek pleasure over all else. Others, with different priorities, may report that they wish above all to be loved, or that they strive to lead lives of honour, or that riches or power matter most, and so on. Importantly, when they disagree in these ways, parties to the dispute may be disagreeing at either or both of two distinct levels. First, people may agree on the characteristics of the final good, only to wrangle about which states or activities exhibit those characteristics. Or their disagreements may be of a higher order: perhaps these varied answers result from non-equivalent assumptions about what it would take for a state or activity to qualify as a final good. Thus, for example, two people might disagree about relaxation, one suggesting that reading quietly in the library is relaxing while the other recommends water-skiing behind a motor boat as the most relaxing way to spend an afternoon. These people might agree about what relaxation consists in, but disagree

about the best way to achieve it, or they might actually disagree about the nature of relaxation, one supposing that any activity which is non-work related, however vigorous or tiring, qualifies as relaxation, while the other understands relaxation to be restricted to quiet, non-stressful stretches of tranquil inactivity. In order to sort out their disagreement, they would, in the latter case, first need to come to some agreement about the general characteristics of relaxation. In a similar way, those who disagree about the final good for human beings will in some cases first need to reflect on the abstract criteria for something's qualifying as a final good in the first place.

Aristotle's procedure is to begin at this more abstract level. His method recommends that in order to determine the final good, we should first agree about what criteria it must satisfy (*EN* 1094a22–27). Only in this way, he supposes, will substantive agreement paving the way for real progress be possible. Aristotle lays down as conditions for the final good that: (i) it be pursued for its own sake (*EN* 1094a1); (ii) we wish for other things for its sake (*EN* 1094a19); (iii) we do not wish for it on account of other things (*EN* 1094a21); (iv) it be complete (*teleion*), in the sense that it is always choiceworthy and always chosen for itself (*EN* 1097a26–33); and (v) it be self-sufficient (*autarkês*), in the sense that its presence suffices to make a life lacking in nothing (*EN* 1097b6–16). The first three of these conditions are reasonably straightforward, though it is necessary to note that (i) and (iii) are distinct, in that (i) holds that other things are done for its sake, whereas (iii) requires that it not be done for anything beyond itself. One might, for instance, pursue health both for its own sake, because it is an intrinsic good, and also on behalf of something more final than it, because it is regarded as a necessary component of a happy life, with the result that one wants health both for its own sake and for the sake of happiness. On that assumption, health would satisfy (i) but not (iii), and so would fail to be a final end according to the criteria given.

The last two criteria are a bit more difficult, since Aristotle is fairly brief in his characterizations of them. For an end to be complete (*teleion*, also sometimes rendered as 'final' or 'perfect'), it must not

only be desired for nothing beyond itself, but *always* be such that it is choiceworthy in itself. Aristotle implies that something might be desired for its own sake and for the sake of nothing beyond itself, and yet fail to be complete, because circumstances could alter its status. One way a final end could be impervious to contingencies would be by being fully comprehensive. Thus, if happiness were the final good, then this might be due to the fact that it embraces all possible human goods. Contrast this with pleasure, which might normally be good, desired for itself and for nothing beyond itself, but nonetheless come to compete against other goods, perhaps honour, and so be rendered less choiceworthy in that circumstance. Similarly, an end's qualifying as self-sufficient (*autarkês*) is an extremely demanding criterion. Something is self-sufficient if its presence *alone* is enough to make a life lacking in nothing. Again, something might be self-sufficient because it is an especially comprehensive good, one embracing all forms of human goodness.

It may seem, given the stringency of these demands, that nothing will emerge as the final good for human beings. After all, what is always choiceworthy for itself and such that all by itself it makes a life lacking in nothing? Looked at from this angle, Aristotle's criteria may seem so austere that they are bound to remain unmet. Looked at another way, though, these demands seem just about right. For they are at this stage only hypothetical. *If* there is some end which qualifies as the final good, the single all-encompassing human good which we seek in all of our actions, then it really should meet the high standard imposed by these criteria. From this perspective, it is easy to agree with these criteria for the final good, because so far we have not also agreed that anything in fact satisfies them. By the same token, if some end does emerge to satisfy them all, we will have a powerful reason to agree that this good deserves its elevated status.

8.2 THE CHARACTER OF HUMAN HAPPINESS: PRELIMINARY CONSIDERATIONS

Perhaps, no matter how stringent Aristotle's criteria may appear, we will nonetheless suppose that there is an obvious candidate for

the final good for human beings. This final and ultimate reason for all of our action is simply our own happiness: we all wish to be happy. We wish happiness for its own sake, and not for the sake of anything beyond it; we pursue other goods for the sake of happiness; if we have achieved happiness, genuine happiness, then our lives are complete and lacking in nothing; happiness, by itself, suffices to make our lives good lives (*EN* 1097a30–b8). This is why, in fact, we wish for happiness above all else. Moreover, this is why the question 'Yes, but why do you want to be happy?' is otiose. In the domain of purposive behaviour, why-questions come to an end with happiness.

So much seems unobjectionable. We desire happiness. What is it, though, that we desire? It falls to the philosopher engaged in practical philosophy to address this question. For though we all agree that we seek happiness, it turns out that our agreement obscures important forms of disagreement, because we turn out to disagree about the nature of happiness (*EN* 1095a14–21). When queried, some of us will say that happiness consists in warm and fuzzy self-regard; others suppose that happiness is fame; others power; and many more are confident that happiness is pleasure. Aristotle argues that each of these answers is wrong.

To some modern sensibilities, the suggestion that someone could be wrong about her own happiness seems preposterous on its face. After all, *I* decide what makes me happy; and *I* know when I am happy and when I am not. Only *I* can judge when I am happy, and whenever I do so judge, then I am in fact happy. Surely it does not fall to the philosopher sitting in her university office to decide such matters for me.

On the contrary, counters Aristotle, it falls to the philosopher to determine the nature of happiness, since happiness, like other central ethical concepts, admits of analysis. Two features of his approach help explain why he proceeds on this assumption.

To appreciate his eventual account, it is first of all necessary to understand a central feature of his approach. Aristotle is committed to an *objective* account of happiness. We may contrast two ways of thinking about happiness.[5] Let us say an account of happiness is *subjective* if it supposes that happiness consists in an

agent's desire satisfaction, whatever those desires may be. Typically, let us suppose, desire satisfaction eventuates in a feeling of warm, even glowing satisfaction and warm self-regard. Thus, on a subjective conception of happiness, an agent can be expected to know when he is happy and to be authoritative about his own happiness. If he *feels* happy, then he is happy, and otherwise not. On a subjective conception of happiness, it barely makes sense to imagine someone reporting, 'I thought I was happy, but I was mistaken.' By contrast, an *objective* account of happiness holds that happiness consists in satisfying some criteria which are not determined by an agent's desires. To be happy, on the objective conception, requires that a person lead a successful and flourishing life, where, again, the conditions of successful living or flourishing are not up to the agent. It is helpful, in this connection, to think about judgments of happiness from a third-person point of view. One might judge that a neighbour or relative is living well, and is flourishing as a human being, even without knowing too much about her interior life. More importantly, one might readily judge that a friend or loved one is *not* living the best life available to them, might lament that they are careering down a path of self-destruction, say by foolish use of harmful drugs, even though, when asked, the person so judged will report, sincerely, that they feel fine, that they are happy. On the objective conception of happiness, we are in principle entitled, in some cases, to conclude that people are wrong about their own self-ascriptions of happiness. In the same way, we may look back at an earlier period of own lives and judge correctly that while we thought we were happy, we were mistaken.

Now, it is often noted in this connection that what we have been calling 'happiness' is for these reasons an unfortunate translation of Aristotle's word *eudaimonia*, which might better be rendered 'flourishing' or 'living well' or 'living successfully'. This point about translation can be easily overblown however: Aristotle appreciates that people disagree about the nature of *eudaimonia*, that 'the many do not give the same answer as the wise' (*EN* 1095a21–22), because they think 'it is something obvious and manifest' (*EN* 1095a22). This is just to say, however, that people disagree about

what happiness is, and that some, who are unreflective, simply assume without warrant that its nature is plain for all to see. From Aristotle's perspective, this should not be ceded without a fight.

What really matters in this discussion is not whether we translate *eudaimonia* as 'happiness' or not, but whether, having agreed to call *whatever satisfies the criteria for the final good* happiness, we can uncover some state or activity up to the task. Aristotle's first contention in this regard is that subjective conceptions of happiness fall down on this score. Sometimes our desires are satisfied, but instead of feeling pleasure or satisfaction, we in fact become perplexed with ourselves, even to the point of self-alienation. A man who desires a yellow sports car more than anything, who sacrifices mightily to obtain it, may wonder, when he has it in his possession, why exactly he had wanted it so very badly. Further, even when we do feel satisfied when our desires are realized, we may in truth have desires not worthy of us. This point is less obvious, but again it may be worth adopting a third-person point of view to appreciate why Aristotle proceeds this way. A woman might regard her dear son with concern, because he is not living up to his potential. She knows in an unbiased way that he is highly intelligent, exceptionally talented, and superior in his natural athletic abilities. Yet she also sees that he is so eager to impress his deadbeat friends that he is purposely performing poorly, because of his burning need to be accepted. Such a mother will rightly judge that her son is not flourishing, that he is not living the rich life he might. If he regards her as meddlesome in her attention, and informs her that he is happy and wants to be left alone, then he might well not be in a position to judge his circumstance correctly, because of his wilful blind spots. If someone now wants to insist that the teenager is nonetheless *happy*, then it need only be pointed out that he is not in any condition which satisfies the criteria for the final good we have accepted. Again, there is no point in squabbling about whether we should render *eudaimonia* as happiness. What matters regarding the case in question concerns whether the boy is leading the best life available to him, whether what he is calling happiness in fact satisfies the criteria for the ultimate human good we have accepted.

Indeed, Aristotle urges, we can see that some common conceptions of happiness do not meet these criteria, and so are to be set aside. One obvious loser is the life of the money-maker (*EN* 1096a6–11). Aristotle does not in this connection disparage money as such, but observes, correctly, that money is an instrumental good. If it is merely an instrument, then money is not choiceworthy in itself and thus violates the very first of our accepted criteria, namely that the final good be chosen for itself. If it is responded that money is nonetheless a good thing, because of what it can procure, Aristotle may be willing to agree; but then we will need to turn our attention to the things it purchases to determine whether they might constitute the final good. Aristotle has other reservations about the life of honour (*EN* 1095b23–1096a4). Certainly living honourably is a good thing. Still, if we seek honour as an end in itself, then we cede our happiness to the whims of others: people can be fickle and foolish, sometimes honouring the unworthy and failing to honour the worthy. The final good, by contrast, is something 'genuinely our own and hard to take from us' (*EN* 1095b24–26). It appears, then, that honour is neither complete (*teleion*) nor self-sufficient (*autarkês*). In any event, its presence, which may be specious, does not suffice to make a life lacking in nothing.

Perhaps the most challenging competitor for the status of qualifying as the final good is pleasure. After all, pleasure is a good thing, and it is chosen for its own sake and not for the sake of anything beyond itself. What is more, it is widely regarded as the best thing in life, as that which we in fact seek above all else. To appreciate Aristotle's attitude towards pleasure it is necessary and instructive to recognize the degree to which his ethical objectivism draws upon his underlying psychological theory.[6] We have seen that Aristotle recognizes all living beings as ensouled, but also supposes that there is a hierarchy among the living, beginning with plants, which have only nutrition, through non-human animals, who add perception, to human beings, who are also rational. This explains why he uses harsh-sounding language regarding hedonists:

> The many, who are the most vulgar, seem to conceive of the good and happiness as pleasure, and accordingly love the life of

> gratification . . . In this way, they appear completely slavish, since the life they choose is the life belonging to grazing animals. But they do have an argument in their defence, since many who are powerful . . . are under the same impression.
>
> (*EN* 1095b16–23)

The hedonists regard themselves as cows, ruminating in the fields, living for pleasure and no more.

In rejecting the view of the many, Aristotle is not merely disparaging them with haughty rhetoric. He means that those who seek only pleasure ignore that they are rational beings, and instead treat themselves as receiving only the sort of gratification possible for the unminded. In so speaking, Aristotle seems to be emphasizing physical over intellectual pleasure, and to be suggesting that pleasure-seekers situate themselves lower on the hierarchy of souls, because they are limiting themselves to sensuous gratification in the absence of intellectual activity. One way to judge the correctness of Aristotle's case might be to envisage the possibility (perhaps not too far off) of a pink pleasure pill. You are offered the possibility of swallowing a pink pleasure pill. If you do, you will feel physical pleasure for the rest of your days. You will, however, do nothing, form no plans, pursue no ends. You will simply sit on a couch for the rest of your days, feeling pleasure, being fed, and being hosed off now and again. All of your days will be days of pleasure, though you will otherwise check out of all activity and all authentic association.

Will you take the pink pleasure pill?

This question is, of course, not an argument but a simple appeal to intuition. Still, if you will refrain from taking the pink pleasure pill, that indicates that you are unwilling to regard at least this form of pleasure as the best life has to offer. You think that your life holds higher possibilities, that the final good for human beings takes us beyond the realm of physical pleasure. Pleasure, again, is indeed a good. That is not in question. What is in question is whether it is the ultimate good for human beings. Aristotle's psychological theory provides reasons for adopting an ethical theory which does not enshrine pleasure in this position.

Thus far, then, we have seen Aristotle: argue that there is a final good for human beings; lay down criteria by which any pretenders to this role may be assessed; allow that we may regard the final good as happiness, or *eudaimonia*, only to insist that some conceptions of happiness, considered as the final human good, may be superior to others; urge that subjective accounts of happiness be rejected in favour of objective accounts; and argue that given these constraints, three widely accepted accounts of happiness – the lives of money-making, honour, and physical pleasure – do not measure up. His rejection of physical pleasure was especially significant insofar as it made free use of the metaphysics of human psychology developed in the hylomorphic framework of his *De Anima*. Aristotle at this point assumes himself justified in appealing to the essential features of human beings in his bid to explicate the best form of life available to us. He does not try to show that we should in fact desire the best form of life available to us, because he takes it for granted that people want what is in fact good for them and not what merely seems to be good without actually being so. What is really good for human beings, however, is determined by what human beings are by nature. The nature of human beings is revealed, however, by reflecting on the teleological structures in terms of which the human function may be specified and understood.

8.3 HAPPINESS AND THE HUMAN FUNCTION

It may come as a surprise that human beings have a function. Computers and can-openers have functions, to compute and to open cans. We know that these sorts of artifacts have functions, and we have no trouble identifying what they are, for the simple reason that we gave them their functions. We designed them with the purposes they have.[7] Aristotle denies that human beings are designed by any form of intentional agent; but he nonetheless insists that final causes occur in nature in the absence of intentional design.[8] If that is so, then it should be possible to identify a human function, which in turn will provide a basis of a *functional account of human goodness*. That is, just as we may say easily that a

good can-opener is a can-opener which opens cans well, we should likewise be able to say that a good human being is a human being who performs the human function well. The key, then, is to specify the human function.

Aristotle is aware that there may be doubts on this score, but thinks they can be met:

> But perhaps saying that the highest good is happiness will appear to be a platitude and what is wanted is a much clearer expression of what this is. Perhaps this would come about if the function [*ergon*] of a human being were identified. For just as the good, and doing well, for a flute player, a sculpture, and every sort of craftsman – and in general, for whatever has a function and a characteristic action – seems to depend upon function, so the same seems true for a human being, if indeed a human being has a function. Or do the carpenter and cobbler have their functions, while a human being has none and is rather naturally without a function [*argon*]? Or rather, just as there seems to be some particular function for the eye and the hand and in general for each of the parts of a human being, should one in the same way posit a particular function for the human being in addition to all these? Whatever might this be? For living is common even to plants, whereas something characteristic [*idion*] is wanted; so, one should set aside the life of nutrition and growth. Following that would be some sort of life of perception, yet this is also common, to the horse and the bull and to every animal. What remains, therefore, is a life of action belonging to the kind of soul that has reason.
>
> (*EN* 1097b22–1098a4)

Aristotle first notes that just as craftsmen have functions (a plumber plumbs, a programmer programs), so too do the parts of the body; moreover, for things with functions, we judge goodness in functional terms (a good plumbers plumbs well, a bad one poorly, and a good eye sees well, and a bad one poorly). Consequently, if human beings have a function, then we will know their goodness when we know their function. We know

their function, contends Aristotle, when we know what is unique or characteristic (*idion*) about them – where, however, what qualifies as peculiar or unique will receive a technical treatment.

Aristotle's identification of the human good thus takes the form of his *function argument* (**FA**):

1 The function of any given kind *x* is determined by isolating *x*'s unique and characteristic activity.
2 The unique and characteristic activity of human beings is reasoning.
3 Hence, the function of human beings is (or centrally involves) reasoning.
4 Exercising a function is an activity (where, in living beings, this will be the actualization of some capacity of the soul).
5 Hence, exercising the human function is an activity of the soul in accordance with reason.

The function argument has proven controversial, not least because many regard it as rather unpersuasive. Some – though not all – of the argument's difficulties result from misunderstandings.

Turning first to objections rooted in misunderstandings, it should be appreciated first of all that (**FA**) is not by itself attempting to prove that human beings have a function. On the contrary, Aristotle is at this point of his *Nicomachean Ethics* making free use of the hylomorphic analysis of human beings as substances articulated and defended in his *Physics*, *Metaphysics*, and *De Anima*. Central to this conception, as we have seen, is that kinds, including organisms, are individuated functionally in virtue of their having final causes. The argument presupposes, and does not attempt to shore up, Aristotle's four-causal explanatory schema, making special use of the role of teleological explanation within it. Thus, the argument sets out to *identify* the function that Aristotle's teleology licenses him to assume we have.

One might acknowledge so much, or at least grant the teleological presuppositions of the argument, only to find it objectionable in its own terms. In particular, (**FA**-1), the claim that the function of any given kind *x* is determined by isolating *x*'s unique and

characteristic activity, seems perverse. Obviously, a kind of entity can do any number of things uniquely without that activity qualifying as their function. Humans alone, it seems, drive around in big Cadillacs. So, is driving a Cadillac the human function? Or again, perhaps only members of the human species sell sexual gratification for cash. If (**FA**-1) entails that the function of human beings is prostitution, then (**FA**) is derailed even as it starts.

(**FA**-1) has no such implication. In claiming that we seek the unique or characteristic activity of a kind, Aristotle intends something much stronger. First, that *some* members of a species engage in activities performed by members of no other species hardly makes that activity *characteristic* of the first species. Indeed, the single word rendered periphrastically as 'unique or characteristic' in (**FA**-1), namely *idion*, is something we have already encountered in its technical role in Aristotle's theory of essence.[9] In that connection, recall, an *idion* is a special sort of property, a necessary but non-essential property which flows from the essence of a thing, as for example it is an *idion* of human beings that they are capable of grammar, or capable of laughter, both traits explicable by the essence of human beings, namely rationality. In the present context, it is doubtful that Aristotle is appealing to the fully technical sense of this term, but it is clear that he means considerably more than what something happens to do, as a matter of contingent fact, uniquely. Rather, he means that we identify the function when we fasten on what it does characteristically, in a central way. Can-openers may also be paperweights, but it is not *idion* for them to play this role. If by chance it happened that all and only redheads were professional flute players, then it would not be *idion* of flute players that they have red hair. Minimally, we expect what is characteristic of a functionally determined kind *F* to be connected to the function and essence of that kind. This is why Aristotle recommends that when we are interested in identifying the function of human beings we turn our attention to what is peculiar or characteristic of them. Doing so will provide a road to essence, and so a road to final causation.

(**FA**-2) asserts that our doing so permits us to identify the unique and characteristic activity of human beings as *reasoning*.

Judged from a certain remove, one may wonder whether Aristotle is not being unfair to the non-human animals, since as cognitive ethology has taught us, plenty of other species engage in all manner of means–end reasoning, can manipulate simple symbols, and the like. Now, in some ways, it turns out, Aristotle proves sympathetic to these sorts of suggestions, since he is sufficiently impressed with animal behaviour to regard their perceptual activities as cognitively rich (*GA* 733a1); in another way, he is unsympathetic, however, since he accepts it as obvious that only human beings engage in natural philosophy, higher mathematics, and metaphysical speculation. One need not accept that there is a sharp distinction between higher and lower cognitive activities to accept that there is a relevant distinction to be made. Moreover, given Aristotle's functional determination thesis, if it emerged that non-humans, whether animals or aliens, really were rational, then they would simply share in the functionally determined human good. The plasticity of his account of kind membership automatically combats parochialism.

In any event, the human good is reasoning. (**FA**-3) draws upon that commitment, but is by design non-committal on the question of how the exercise of the human function is to be understood, narrowly or comprehensively. That is, as stated, this interim conclusion holds that the function of human beings *is identical with* or merely *centrally involves* reasoning. Taken narrowly, this would amount to the claim that the human good is exhausted by rational activity, that the human good consists in mathematic reasoning or philosophizing. Taken comprehensively, the human good might simply be an expression of reason in a well ordered life, so that, for example, a life in politics might be conducted rationally or irrationally, where the rational execution of a political life would qualify as an admirable expression of the human good. At this juncture, we need not decide how Aristotle might be thinking of rational activity,[10] noting only that (**FA**) eventuates in the conclusion that the human function is an activity of the soul conducted in accordance with reason, that is the living of a life which is an expression of the essential nature of the human kind, namely rationality.

Thus, Aristotle concludes, the human good consists in leading a fully and characteristically human sort of life. This conclusion highlights three distinctive features of Aristotle's account of human happiness. First, human happiness is a kind of living and is thus an *activity* rather than a passive state or affective experience; happiness is a doing rather than a being. That is, the best form of life is active rather than passive. This is yet another reason why a human being would not, upon rational reflection, ingest a pink pleasure pill when offered: feeling pleasure is an affective state, whereas the best form of human life involves the execution of plans and projects. If it seems to you that you would not be living the best life available to you by sitting on a sofa, catatonic but feeling fine, then this may reflect some acceptance of Aristotle's thought that the best life consists in activity rather than in being affected.

The second distinctive feature we have already met, but can now better appreciate: the conditions of happiness are objectively given. We do not choose our essences. If an existentialist seeks to reverse this order by suggesting gamely that 'existence precedes and rules essence',[11] Aristotle will simply demur: we arrive in the world as rational beings, capable of engaging in the characteristic activities of our kind. Given that we have not chosen our kind, we have not chosen our ends; and given that we have not chosen our ends, we have not chosen our highest good. Of course, Aristotle has nowhere suggested that we cannot choose how we wish to pursue our good. Thinking of the human good comprehensively, we see that there are myriad paths to the expression of our essence, in philosophy, in the arts, in politics, in engineering, and so forth. There are many ways for a harp player to play the harp well, but blowing into a tuba does not number among them.

Finally, these first two distinctive characteristics combine to give rise to a third. Aristotle expects judgments of human happiness to range over long stretches of life, perhaps over a whole life. He cites with approval a famous dictum of Solon's: 'Look to the end' (*EN* 1100a10–11). While it is possible to judge an affective state episodically, the expression of an essence seems necessarily extended in time. That is, we can say, without fear of contradiction, we experienced pleasure last evening at 10.15 p.m. while

eating dessert. Happiness, as the active expression of an objectively given end, is not like that. We will not judge someone to be a great violinist on the basis of a few notes well played, even if we think those notes greatly played; the judgment that someone is a great violinist requires more. Nor will we say that someone is a vegetarian for the period between breakfast and lunch if they have eaten no meat just then, especially if they have also eaten sausages for breakfast and plan on a hamburger for lunch. Any such judgment can be made only on the basis of a stable pattern of activity over a suitably long period of time. So too with judgments about happiness. If this suggestion bristles, it is really only a consequence of the objective character of Aristotelian happiness. We do indeed say, for instance, 'I was feeling happy before you phoned this morning.' Again, there is no point in quibbling about our unreflective manner of speaking. Still, to capture how Aristotle is thinking about happiness as the best life available for human beings, we might nonetheless note that it would be odd to say, 'I was leading a life which was the active expression of my essence as a rational being before you phoned this morning.' Of course, one could imagine a scenario where someone might be induced to utter such a sentence, but not readily.

In any event, once he has identified the human function in these terms, it is a short step for Aristotle to characterize the human good in his canonical expression (*EN* 1098a161–17):

- The human good $=_{df}$ an activity of the soul expressing reason in a virtuous manner.

The sudden appearance of an appeal to *virtue* may be unsettling. So far we have been talking about the human good and our drive towards happiness without any mention of virtuous conduct at all. In fact, Aristotle's appeal to virtue in this connection is not at all out of place. In speaking of 'virtue' in this connection, Aristotle is thinking in the first instance of virtue in the sense of *excellence*. That is, Aristotle's word for 'virtue', *aretê*, makes it natural for him to think of virtue not only in the narrow, moral sense, but also in a broader non-moral sense also present in the semantic field of the

English word 'virtue', though not as prominently as it is in the Greek *aretê* ('It was one of her great virtues as a general practitioner that her diagnostic technique was quick and flawless'). Thus, his account of the human good is equivalently the claim that it consists in the most excellent expression of the rational features essential to the human soul. The best life for human beings is a life expressing, in the most excellent manner, those features which make us distinctively human. Since happiness, or *eudaimonia*, is this highest good, we should expect it to be desired for its own sake, for the sake of nothing else while other goods are desired for its sake, and such that its presence renders a life complete and lacking in nothing. For these are, after all, the conditions laid down for happiness, and in terms of which other contenders were set aside.

8.4 THE VIRTUES OF CHARACTER

A happy life is a life excellently, or virtuously, lived. It follows, Aristotle suggests, that an account of happiness will require an account of virtue, or excellence (*aretê*) (*EN* 1102a5–7). Since, however, happiness is an expression of the faculties of the soul, the forms of excellence to be investigated do not extend to those pertaining to the body. An excellent body might be one with a good cardio-vascular system or an efficient digestive tract, but these sorts of excellences are held in common with the non-human animals, and so are hardly unique or characteristic of humans. The forms of excellence or virtue requiring consideration are those pertaining to the human soul, which is a rational soul. An account of happiness will give way to an account of the virtues belonging to the rational soul (*EN* 1106a16–26).[12]

It is a commonplace that the human soul is not purely or exhaustively rational. It is natural and easy to distinguish between reason and passion, between reason and desire or appetite, or between, in a popular idiom, the head and the heart. These contrasts are not the same; and they are hardly precise. On the contrary, each begs for clarification and defence, especially when agents appeal to such distinctions while seeking to excuse their

bad conduct. ('I'm sorry. I don't know what came over me. I was so angry. I just wasn't thinking.') It is nonetheless natural to suppose, as Plato had urged in the *Republic*, that different parts of the soul can conflict and give rise to different sorts of actions. Appetite bids that I drink this water, while reason pauses to wonder whether the water is safe. Others have assailed this popular and philosophical thought by insisting, along with Hume,[13] that reason and the passions cannot conflict, since reason is motivationally inert, whereas the passions by nature compel. Evidence for this way of thinking is supposed to follow from the fact that we can reason correctly that an almost imperceptible change in the standard of living in the first world could wipe out poverty in the third without there being any movement in this direction. Reason calculates but does not direct; the passions motivate but do not reflect upon their ends.

These varying attitudes towards human motivation betray the shifting sands of moral psychology. Aristotle accepts a moderate position, eschewing the extremes of Hume while acknowledging the popular view that some parts of the soul are rational and others not. It is easy to see that some parts are non-rational, given the theory propounded in *De Anima*: the nutritive soul is neither rational nor amenable to reason. Digestion is not irrational but simply *non*-rational. Still, suggests Aristotle, we may rightly identify a non-rational part of the soul, the seat of appetite and desire, which may indeed conflict with reason though it may also respond to reason and be integrated into its practical plans in a well-ordered life. He offers as evidence for this view that we speak freely of people who control their impulses and desires and contrast them with those who habitually succumb to the proddings of desire, only to experience regret and remorse after the fact (*EN* 1102a28–1103a3).[14] He implies that unless we are prepared to be wildly revisionary about how we regard human motivational psychology, we should accept both rational and non-rational parts of the soul, and allow that these can come into conflict but that they can equally be harmonized with one another in a unified agent.

These distinctions within the soul find correlates in our account of virtue. Given that we have identified one part of the soul which

is purely rational and another which is non-rational but amenable to reason, we should anticipate that the kinds of virtue accorded to each will differ. In general, we have seen in *De Anima* that reason may be theoretical or practical (*DA* 431a8–17, 432b27–433a1, 433a14–16), and this Aristotle reaffirms in his *Nicomachean Ethics* (*EN* 1139a26–35). The theoretical sphere does not deal with action, but with understanding; the practical sphere, by contrast, concerns what is to be done, what action is to be taken and when. Hence, Aristotle concludes: 'Virtue is of two sorts, intellectual and moral' (*EN* 1103a14–16). Moral virtues are those virtues which pertain to character,[15] but they are not confined to the non-rational part of the soul taken in exclusion from the rational. On the contrary, a person who is fully virtuous in her character will be such that her non-rational part integrates the ends of the rational part into their own.

Focusing first on the virtues of character, Aristotle develops a general analysis of moral virtue with an eye not on theoretical analysis as an end in itself, but on the best route to becoming a good person. After all, he contends, the purpose of ethical theory is to help us become good (*EN* 1103b26–34). Towards this end, he proceeds by appealing to a distinctive doctrine rooted in the thought that virtue aims at a kind of habituation, in the inculcation of strong and deeply seated states of character, in a manner similar to what we find in craft production. If, that is, our goal is to produce good and decent people, and their goodness and decency of character consists in their expressing stable virtues of character, we might look to the productions of crafts to see how best we might succeed. Aristotle observes that when we view a successful production of some craft, say a beautiful table masterfully executed by a journeyman carpenter, we find ourselves agreeing that a kind of equilibrium or balance has been reached: adding or subtracting anything at all would only detract from the product (*EN* 1106b8–16). So too, perhaps on the basis of this too-slender analogy, Aristotle argues that a virtue realized achieves a *mean* between excess and deficiency.

Tying together some of these strands, Aristotle offers a general account of moral virtue, or the virtue of character:

> Virtue is a state of the sort which issues decisions, consisting in the mean relative to us, determined by reasoning of the right sort, that is the reason in terms of which a wise person (the *phronimos*) would determine it. It is a mean between two vices, one of excess and one of deficiency.
>
> (*EN* 1106b36–1107a6; cf. 1138b18–20)

Although he does not advance a tidy argument on behalf of this account, Aristotle does offer considerations on behalf of each of its components. In an effort to understand this account, we must consider at least briefly each of these:

- The first component is that virtue is a state (*hexis*). Aristotle argues briefly that virtue must be either a feeling (*pathos*), a capacity (*dunamis*), or a state (*hexis*). It cannot be a feeling, since people are regarded as excellent or rotten on the basis of their manifesting virtue or vice, but not insofar as they have feelings of one sort or another. Further, virtue cannot be a mere capacity, since we are endowed by nature with capacities and become virtuous only by exercise and habituation. Hence, virtue must be a state (*hexis*), an acquired but entrenched condition of character, achieved through guided development and habituation (*EN* 1105b20–1106a13).
- Virtue is the sort of state which issues in decisions (*hexis prohairetikê*). Aristotle is speaking fairly technically here, employing a term which he elsewhere indicates involves our being in a state which presupposes prior deliberation (*EN* 1112a14–16). He is not suggesting, however, that virtuous conduct requires deliberation immediately preceding action. On the contrary, virtuous action flows directly from an entrenched state. He means that a virtuous state is one which, having been guided by deliberation in its inculcation, is the sort which eventuates in decisive action.
- Virtue is determined by reasoning of the right sort (*orthos logos*), reasoning that can eventuate in a general direction for conduct in a general situation, though not in a fine-grained or determinate rule for all situations (cf. *EN* 1138b18–1140b24).

- This sort of right reasoning is precisely what an intelligent person, or person of understanding or practical wisdom (*phronimos*), would arrive at in the situation in view. Such a person is able to grasp what is in fact true about what is good or bad for a human being, and so will not be liable to imprudent confusions on this score. Aristotle is not saying that the intelligent person *determines* what is right by fiat, but that since the intelligent person characteristically *recognizes* what is right, it is sensible to follow his lead (cf. *EN* 1140a25–b6).
- Finally, virtue is a *mean* (*mesotês*) between extremes, but only relative to us. In speaking of a mean *relative to us*, Aristotle suggests that an agent must look to herself and her context in making a determination. Thus, it would be wrong to rely upon a purely quantitative formula. If six is the mean between ten and two, we should not infer that we should eat six pieces of pizza, on the grounds that ten would be too many and two too few. What we should eat will depend upon facts peculiar to us, how much we weigh, how quickly we metabolize and so forth. Perhaps Milo the wrestler should eat six pieces of pizza, because that would be healthy for him; this would not be the mean amount for most. Carried over to the virtues of character, Aristotle's suggestion would be that there is not, for example, an unwavering amount of righteous indignation suitable for all agents in all contexts. High indignation is excessive when a waiter gives us the wrong spoon for our grapefruit, but not so out of place if the same waiter without provocation tells us that he might enjoy molesting our daughter.

Among these components, the most distinctive is the doctrine of the mean, which accordingly requires further development.

Aristotle notes that we do not in every instance seek the mean, or seek the mean under every possible action description. Some actions are base, come what may: we do not practise adultery with the right neighbour at the right time and in the right amount. As its very name suggests, adultery is a vice (*EN* 1107a9–25). Aristotle's point here has both a substantive and a non-substantive

dimension. On the non-substantive side, he is merely pointing out that a mean exists only relative to some descriptions of actions and not others. Still, a judgment about which descriptions are to be employed already reflects a judgment about what is to be regarded as good or as otherwise – as adultery is always regarded as base. Perhaps, though, we join him in this presupposition when we argue, for example, whether a killing was a case of manslaughter or a murder, the implication being that if it was a murder the killing was more reprehensible then if it were mere manslaughter. Even so, there remains some difficulty about when it is appropriate to select descriptors which presuppose that an action is so thoroughly vicious that it is nowhere on a continuum upon which virtue sits as a mean.

That acknowledged, Aristotle's doctrine of the mean is best understood in relation to the individual virtues, as he himself insists. In presenting his theory, Aristotle finds it necessary to make recourse to neologisms and appropriations from ordinary language. This he regards as unproblematic, since he notes that in some cases, the extremes are nameless (*EN* 1107b2). This may simply derive from the fact that we rarely or never encounter people deficient along some dimensions. In any event, he will suggest that where rashness and cowardice are the deficiency and the excess, courage is the mean; between self-indulgence and self-deprivation, moderation is the mean; where great sums of money are controlled, between the excesses ostentation and niggardliness is the mean of magnificence; but where smaller sums are concerned, between wastefulness and stinginess lies generosity (*EN* 1107a32–1108a31). In these and like cases, Aristotle thinks it is in principle possible to place virtuous action along a continuum, even if the ends of the continuum are not recognized in popular discourse.

Consequently, Aristotle's doctrine of the mean has come in for criticism, sometimes on the grounds that it is forced or artificial, and so perhaps insufficiently general. The first sort of criticism in this direction carries little weight. The bare fact that we lack names for some excesses or deficiencies matters little unless it can be shown that the only excesses or deficiencies of character are those that we have happened to notice and name. A second sort of

criticism is more consequential.[16] To see the problem, consider the virtue of honesty. If we do agree that this is a virtue, then there seems to be no obvious excess to which the corresponding deficit is a vice. That is, the vice associated with honesty is lying, its opposite. Thus, even if one were to manufacture an excess, say painful truth-telling ('My, you've gained weight'), there seems to be no non-forced continuum along which lying is at the other end. Now, how serious a problem this might be depends in part upon the range of virtues we are prepared to entertain. The sort of honesty Aristotle discusses in the *Nicomachean Ethics* is only a kind of self-regarding honesty, which seems reasonably well suited to his preferred treatment. This is honesty restricted to one's own accomplishments, where the excesses are boastfulness and self-deprecation (*EN* 1108a20–23). It is, however, a difficult matter to determine which virtues we should in the end be prepared to entertain. In one direction, it would be inappropriate to allow Aristotle to select only those amenable to treatment in terms of the mean; in the other, without external warrant, we would be premature in concluding that his framework topples because it cannot handle some seeming virtues to which it is ill-suited. In either case, however, the onus is upon Aristotle to supply a legitimate decision procedure to deal with disputed cases. Otherwise, at the very least he will be guilty of an unhappily blinkered parochialism.[17]

8.5 A PUZZLE ABOUT *AKRASIA*

The virtues of character do not exhaust human virtue, since there are equally virtues of intellect, belonging to the rational part of the soul, to be considered as well. Aristotle devotes *Nicomachean Ethics* vi to this task only to give way in the following book to a tangled and engaging discussion of *akrasia* – *incontinence* or *weakness of will*, or perhaps simply *lack of self-mastery*. Recall that Aristotle has insisted in setting up his discussion of the virtues of character that there are two parts of the soul, one rational and one amenable to reason. One bit of evidence for that distinction appealed to common experience, that we sometimes find ourselves at variance with our

own reasoned decisions, to the point where we find ourselves doing things we had determined not to do (*EN* 1102a28–1103a3). Common as they may be, such experiences are puzzling, in part because they raise questions about the relations between the different parts of our souls, or our selves. Suppose I determine to exercise today. I don my exercise clothes and head towards the gymnasium – but then decide instead along the way to step into a pub for a drink. I end up socializing rather than exercising, and in the morning regret that I failed, again, to do what I had determined to do. One might well wonder: if I earlier determined to Φ and now regret not Φ-ing, then how am I related to the person who decided to Ψ instead of Φ between then and now? Surely I am the same person (hence my regret), and in between I simply abandoned my earlier determination to Φ (so, then, why my regret?). Perhaps I wish I were not the sort of person I am; but then again it was up to me not to be such a person.

These sorts of questions are salient for Aristotle both because he hopes to capture the phenomena of our lives as we lead them and because he needs to show how the rational and non-rational faculties of our souls intersect to make fully flourishing human life practicable. Aristotle has some difficulties characterizing *akrasia*, and displays a bit of ambivalence about how best it should be conceived. On the one hand, he is critical of Socrates, who had argued in the *Protagoras* against the possibility of *akrasia*, at least against the backdrop of a certain kind of highly unified agency.[18] Socrates' argument in this direction, Aristotle cautions, 'contradicts the manifest appearances' (*EN* 1145b27–28). That may seem fair enough: surely we are sometimes weak-willed. Indeed, for many of us, the akratic cycle is regrettably familiar: we resolve to pursue a course of action *a* in preference to *b*, because we believe that *a* is, all things considered, preferable to *b*, and yet then, at the moment of action, choose *b*, only later to engage in harsh self-recrimination and remorse, followed by renewed resolve to be stronger and better at the next opportunity. Surely, if he had wanted to deny the existence of this sort of experience, then Socrates would have had to explain away a fair bit of our common experience. This is what Aristotle intends when criticizing him for

denying the phenomena. Yet, arrestingly, at the end of his treatment of *akrasia*, Aristotle comes around to a much softer judgment of Socrates. In a certain way, he says, his own account seems to give Socrates what he was looking for, which was that knowledge cannot be dragged about like a slave by the mastering passions (*EN* 1145b324–25, 1147b15). One approach to understanding Aristotle's position is, then, to determine how Socrates is and is not right about *akrasia*.

The matter is complicated because we have two layers of interpretation interacting, namely our view of what Socrates held in the *Protagoras* and Aristotle's presentation of him, perhaps drawing upon that same dialogue.[19] As Aristotle represents him, Socrates denied the phenomenon of *akrasia* by treating all cases of weakness as involving cognitive failure. We will mainly defer to Aristotle's presentation of him, since in the present context we are trying to work out Aristotle's view of the matter. According to Socrates, we should not assign the causes of our weakness to a failure of will, or an overpowering desire of any kind, but to a miscalculation. Indeed, relative to a certain group of background assumptions, this may seem just right. Suppose that we are highly unified, in the sense that we submit all decisions to a single, seamless faculty-governing action. Further, if we are egocentric hedonists always concerned with our own pleasure maximization, and always focusing our attention on the single sort of pleasure there is, then it is hard to see how we might go wrong – unless we somehow fail to understand the likely results of our actions. It is as if we were dedicated stock market investors, who, having determined how best to maximize profits, nonetheless decided to invest our money in stocks we expected to be substandard performers. Such conduct would be odd. Minimally it would require some explanation. After all, we would have no motive to engage in such conduct in the circumstances envisaged. More likely is the thought that if we in fact purchased the poorly performing stocks, the only plausible explanation for our doing so resides in miscalculation. That, though, is a cognitive error.

It is fairly easy to see how Aristotle thinks this Socratic picture has gone wrong. It will prove less easy to see how it has gone

right. To begin, according to Aristotle, the Socratic picture relies upon a false moral psychology, according to which we are in fact highly unified agents. We are not. As we have seen, our souls have rational and non-rational facets and these can come into conflict in compelling us to act. So, in the first instance, Aristotle objects to the underlying psychology giving rise to the putative impossibility of *akrasia*.

Aristotle argues that there are further complexities which must equally inform our account. To begin, two background distinctions must be observed. First, we can speak of both *having* and *using* knowledge, a distinction already familiar from *De Anima* (*DA* 417a21–b1), where it was given in terms of first and second actuality (*EN* 1146b31). Claire might have the knowledge that there is a detour along her customary route home, but not be using it, in the sense that she is not now thinking about it, for any number of reasons. Those reasons are inconsequential if she is not now driving home, because she is at work, as a doctor attending to her patients and concentrating on their care and treatment. They become consequential if when driving home she is so distracted by wondering whether she has ordered the correct treatment for a patient that she does not make use of her knowledge; she will likely regard herself as blameworthy while sitting in traffic, lamenting that she *knew* there was a detour to be avoided.

The second preliminary distinction is a bit more complex, involving what appears to be in Aristotle's mind a rational reconstruction of the antecedents of our action. Each time we do something intentionally, he suggests, we may regard our action as preceded, at least implicitly, by a kind of practical syllogism, made up of a universal and a particular premise.[20] The universal premise commends such and such a goal to be pursued, for example that sweet things are to be eaten (*EN* 1144a31–33). The particular premise locates the actor in a situation wherein the universal premise applies, for example *this* is something sweet. This seems at best a rational reconstruction because we do not actually rehearse such a syllogism for ourselves each time we act. Even so, it is plausible in a broad range of cases that some such reconstruction is both possible and apt.

Armed with these two distinctions, the basic outline of Aristotle's approach to *akrasia* is clear, though thereafter matters become hotly disputed. His basic thought is just that, combining these two preliminary distinctions, knowledge failures may take several different forms. One might: (i) have but not use knowledge of the universal premise; (ii) have but not use knowledge of the particular premise; or in principle (iii) have and use knowledge of both premises, but fail to use them concurrently. This last suggestion may be a bit surprising, but the idea has a natural logical analogue. Raphael may know that all mammals have lungs and that *this* dolphin is a mammal, yet find himself surprised the veterinarian proposes to perform a lung-transplant operation on this dolphin, because he somehow failed to *connect* the two bits of knowledge he was using, and somehow did not appreciate that *this* dolphin has lungs. If that is possible, then his knowledge failure is somehow a gestalt matter rather than a local one.

Aristotle draws attention to this sort of gestalt affair (*EN* 1147a31–b5), and also to both of the premises individually, sometimes emphasizing knowledge failures pertaining to the particular and other times pertaining to the universal. Wherever one should locate the knowledge failure involved, *akrasia* is possible, he suggests, because of one's 'knowing and not knowing' (*EN* 1147b17–18). To this extent, Socrates is vindicated after all: *akrasia* does involve a kind of knowledge failure, if not the simple sort of knowledge failure he had envisaged (*EN* 1147a14–19).

Aristotle's treatment of *akrasia* resists easy interpretation; it is also consequently difficult to assess its defensibility. There is little scholarly consensus regarding the precise contours of his view, though this may be due in part to the unclarity both he and we have about the phenomena under consideration. It is not special pleading on Aristotle's behalf to note that puzzles about *akrasia* admit of a range of formulations, some of them arcane and removed from experience and others of them striking in their simplicity. Hence, if some of the difficulty with Aristotle's treatment results from his own hesitance and unclarity, it seems fair to conclude that some also results from the permanently puzzling character of the phenomenon.[21]

8.6 FRIENDSHIP

Aristotle treats many virtues, both moral and intellectual, throughout his *Nicomachean Ethics*. One sort of virtue, or concomitant of virtue (*EN* 1155a3–5), merits special treatment because of its tendency to correct a misimpression we might form about Aristotle's ethical theory. The misimpression is that Aristotle's theory is thoroughly egoistic: we have been focusing on happiness (*eudaimonia*) and the best way to secure it. It might be natural to conclude on this basis that ethical theory begins and ends in an account of self-regarding attitudes. The corrective to this misapprehension is Aristotle's treatment of friendship (*philia*).

One might well ask, in a narrowly self-interested vein, why we should want to have friends, if having friends requires that we care about their well-being even if it means that we must on some occasions sacrifice our own. Even if we think of them as necessary for our own happiness, it might nonetheless seem that friends are best regarded as mere instruments to our own pleasure, toys to be played with when they suit our interests but shelved when they do not. Aristotle identifies different kinds of friendship (EN 1156a6–b33), some of which might seem to expect nothing more than this sort of instrumentalism:

- Friendships based on *utility*, where a bond is formed primarily on the basis of mutual benefit, of the sort characteristic in ongoing business relations.
- Friendships based on *pleasure*, where the basis of the relation is shared pleasures, as when witty people delight in exchanging clever remarks.
- Friendships based on *goodness*, complete or perfect friendships, where two people equal in virtue care for one another for their own sakes and form their friendships on the basis of character.

Aristotle observes that the first two forms of friendship, which he regards as secondary, are easily dissolved and tend to disappear when the source of the friendship dries up.

If these sorts of relationships are instances of friendship, then friendship does not require concern for another for her own sake (cf. *EN* 1155b31–1156a5, where Aristotle nonetheless seems to imply that all friendship requires such regard). For neither friendships of utility nor friendships of pleasure seem to require any other-regarding consideration on the parts of those who enter into them. It is sometimes suggested that the oddness we may feel in this results from the fairly wide compass Aristotle has in view for *philia*, which extends beyond friendship in a familiar modern, social sense. The translation, however, does not seem inapt, since we equally speak of friendships in business relations ('I have a friend in shipping who can check the status of the order') and pleasure-based relations ('Marcus was the sort of friend I called when I was feeling blue and wanted to forget my troubles'). The main concern with such friendships is that they are secondary forms of friendships, as Aristotle suggests they are: though they are useful, or even necessary, for commodious living, they do not represent Aristotle's primary interest in friendship, which he restricts to the finest kind, friendships based on goodness. In its finest form, friendship endures as long as virtue endures; but since virtue is a stable state of character and is essentially extended in time, true friendships are not easily dissolved.

Indeed, in perfect friendship, we expect friends to regard one another as second selves. Partly on this basis, Aristotle argues that we have reason to love others as we love ourselves – and we do have reason to love ourselves. Once we distinguish appropriate self-love, founded in a correct view of the self as a rational being, not as a self-involved seeker of pleasure, money, or honour, we have reason to regard ourselves as the bearers of intrinsic worth (*EN* 1168b11–1169a7). In perfect friendships between equally virtuous partners, however, one friend will share the other's character, so that what one cherishes in himself he will also recognize in the other. The good loved in oneself will then be equally realized and loved in one's second self. There being no relevant distinction between these forms of goodness, one friend, suggests Aristotle, will have cause to sacrifice goods, wealth, even life, for another. This, of course, is the crucial cross-over, or attempted

cross-over, from self to other, and so from narrow egoism to an undeniable form of altruism, implicating a friend as it does in other-regarding conduct.

Aristotle buttresses this suggestion by reaching back to the original conditions on the highest good, arguing that friendship is necessary for self-sufficiency, that condition which when satisfied yields a life lacking in nothing (*EN* 1097b6–16).[22] We will, then, be motivated as eudaimonists to seek our own happiness; we achieve human flourishing, however, only in the company of indispensable friends. When we have friends of great goodness and character, we recognize their worth antecedently: they are not good because they are our friends, but are our friends because they are good, and manifest those traits we rightly recognize as good in ourselves. To counter that we are thus using such friends for the sake of our own happiness confuses perfect friendship with friendships of utility.

In fact Aristotle's treatment of friendship's basis for altruism has two discernible strands, each perhaps relying on the other. He does not offer them as discrete arguments, though they do seem to draw upon importantly different considerations. They are best presented in tandem, so that the distinct wellsprings of each may be emphasized. This process also helps highlight an easily overlooked component of Aristotle's arguments, namely that they draw freely upon what he now regards as settled doctrines defended in his metaphysical and psychological theories.

The first argument takes seriously the language of friends as *second selves* (**SS**) (*EN* 1107b5–14):

1 If we are fine and virtuous, then we regard ourselves with proper self-love.
2 If those features are worthy of love as they occur in us, then they are no less worthy of love if they occur in our friends, who are our second selves.
3 Because they are our equals in virtue, our friends will indeed manifest the same fine features we ourselves manifest.
4 Hence, the fine features manifested by our friends are worthy of love.

5 If their features are worthy of love, then this gives us reason to care for our friends because of who they are.
6 Hence, we have reason to care for our friends because of who they are (*EN* 1156a19–11, 1156b10, 1156a17–18).

On this sort of basis, Aristotle concludes that 'just as each person's own being is choiceworthy, so too is a friend's being choiceworthy' (*EN* 1170b7–8).

The first premise (**SS**-1) reaffirms that proper self-love is perfectly virtuous. If we falsely deny our rational worth, then we are self-deprecating; if we exaggerate our worth, then we are self-aggrandizing braggarts. If it is indeed true that we are in a condition answering to the criteria set for the best human life, then trivially we have reached some condition which is good in itself, and appropriately acknowledged as such. (**SS**-2) contends that virtuous traits are not enhanced by being *our* virtuous traits, nor diminished by being *your* virtuous traits. This is all the more emphatically so if you are my second self. Now, it is tempting to insist at this point that talk of 'second selves' is oxymoronic: a self is necessarily an individual, and there can be at most one of each. It is doubtful that Aristotle seeks to deny this. Rather, friends of equal virtue are tokens of a type; and the type is something worthy of love. It is difficult to determine why it should not be arbitrary to love one betokening over another. If a serious composer rightly regards his masterwork as realizing great beauty, but recognizes this same beauty in the composition of another, there seems little room for him to insist that the beauty of his work is more beautiful, or more valuable, because it is manifested in his work.

It is important to realize when assessing (**SS**-2) and the premises which follow that in this argument Aristotle is relying upon his general account of human happiness, as objectively given and determined by the essence of human beings. If we recall Aristotle's objective account of happiness at this point,[23] then we appreciate that judgments about happiness are judgments about human flourishing. If we think that human flourishing is a good thing, then we find it good in our flourishing friends no less

than in ourselves. It follows, of course, that when we show our concern for our friends, we are not interested in helping them secure the ends of their desires, whatever those may be. On the contrary, if our friends desire things inimical to their flourishing, then we tell them so, precisely because they are our friends and we care for them.

The second strand in Aristotle's defence of friendship also reaches back to his general account of happiness and its metaphysical underpinnings. He argues that one condition set for the best life is especially significant when we come to ponder the point of friendship. The final good for human beings must be self-sufficient (*autarkês*), such that its presence suffices to make a life lacking in nothing (*EN* 1097b6–16). Aristotle now argues boldly that one cannot be self-sufficient without friendship:

> If being is choiceworthy in itself for the person who is blessed, because it is naturally good and pleasant, and if the being of his friend is closely similar to his own, then his friend too will be choiceworthy. Whatever is choiceworthy for him he must possess, since otherwise he will in this way be lacking in something. Hence it is necessary for anyone who is going to be happy to have excellent friends.
>
> (*EN* 1170b14–19)

In some ways, this argument draws upon Aristotle's view that friends are second selves; but it adds a stronger claim as well.

The claim it adds is that one who lacks friends lacks self-sufficiency (**LSS**):

1 If S does not possess a choiceworthy friend, then S lacks something choiceworthy.
2 If S lacks something choiceworthy, then S is not self-sufficient.
3 If S is not self-sufficient, then S is not happy.
4 Hence, if S does not possess a choiceworthy friend, S is not happy.

(**LSS**-1) seems to draw upon Aristotle's reflections on the interaction between proper self-love and the recognition of the grounds

of that love as manifested in another. He once again reverts to the general framework of his objective conception of happiness by recalling that the best life, whatever it may be, will be one which is self-sufficient. If friends are necessary for self-sufficiency, then friends are equally necessary for happiness.

In one way, (**LLS**-4) may not seem to take us from narrow egoism to some form of altruism. After all, once someone has a friend, it may be observed, she may be happy; should the loss of that friend threaten unless sacrifices are made, then that friend will only need to be replaced by another. So, the demand for self-sufficiency, even thus interpreted remains compatible with an unseemly instrumentalism.

Aristotle's attitude towards this sort of criticism is multi-tiered. To begin, he implies that this sort of complaint may simply betray an especially fatuous kind of psychological egoism: it seems to presuppose that it is always possible, or perhaps even necessary, to regard others in wholly instrumental terms. Aristotle doubts this, since once it is agreed that a friend, because virtuous, has attained some objective intrinsic value, it becomes difficult to fathom why this should be set aside when we move to act, or indeed *how* it could be set aside – if, that is, we have formed a perfect friendship with that person. If we have reason to be virtuous, and friendship is a virtue, then we have reason to develop perfect friendships. Having developed such bonds, we will act for the sake of others as an expression of our friendship towards them. If we are thinking of their usefulness to us, then we are also thinking of them not in terms of perfect friendship, but in terms of utility. It seems unnecessary to agree that all friendships must be restricted to mere friendships of utility. Moreover, it seems implausible that a human being flourishing fully in Aristotelian terms would be disposed to regard all others – all intimate friends, all family members, all whom we love – in such narrowly instrumental terms.

Part of the reason that this seems implausible to Aristotle is that we are likely to have appreciably different sorts of affective responses to friendships based on utility and friendships based on goodness. In order to illustrate the sorts of affective responses we

can expect perfect friends to evoke from one another, Aristotle frequently appeals to the sort of tender regard a mother has for her children (*EN* 1159a28, 1161b27, 1166a5–9). It is a commonplace that parents willingly suffer and sacrifice for their children's well-being. From the detractor's point of view, perhaps the behaviour of parents is irrational. From Aristotle's, it represents the normal human affective response to an object of love.

8.7 THE FINAL GOOD FOR HUMAN BEINGS RECONSIDERED

After completing his accounts of the virtues, Aristotle returns in the last book of the *Nicomachean Ethics* to review the best life for human beings, as he had in its first book. Although it begins as a familiar summary, the recapitulation carries a surprise. As Aristotle recounts his view, he introduces elements not only left unmentioned in his earlier treatment but so singular and distinctive that they threaten to contradict the earlier account directly. To some scholars, the contradiction is so plain and palpable that it shows clearly that the tenth book of the *Nicomachean Ethics* cannot form part of a single work with the preceding nine. To others, matters have seemed less dire; although there does seem to be some tension, it is possible to reconcile what is said in these different parts of the work simply by attending to Aristotle's presentation of the issues.

The problem arises most directly when Aristotle revisits his conception of the best life:

> If happiness is an activity in accordance with virtue, it is reasonable that this will be the supreme virtue; but this will be the virtue of what is best. Whether this is reason or something else which seems by nature to rule and to lead and to have thoughts of things fine and divine – be it itself divine or the most divine element within us – its proper activity will be complete happiness. As has been said, this activity is the activity of contemplation. This would agree with what has been said before, and also with the truth.
>
> (*EN* 1177a12–19)

It is surprising to find Aristotle contending that the view expressed here coheres with what has been said elsewhere. For, on the contrary, whether or not what he says here agrees with the truth, it does not seem to agree with what has been said before, because it was *not* said before that the human good consists in contemplation. Rather, having divided the rational soul into the rational and non-rational, the bulk of the *Nicomachean Ethics* has pursued discussion of the moral virtues, or virtues of character, followed by a discussion of the theoretical virtues. If the expression of such virtues is now excluded from the realm of happiness, then the current claim not only fails to cohere with what has been said earlier, but cannot even be made to reconcile with it.

Put into sharper relief, the problem Aristotle faces may be seen as his accepting the following inconsistent pair of propositions, one an encompassing conception of the good and the other a narrow conception:

- *An Encompassing Good*: The human good consists in the expression of human virtue, where human virtue includes a broad range of activities, encompassing the full range of moral and intellectual virtues.
- *A Narrow Good*: The human good consists in the expression of human virtue, where human virtue is limited to the finest intellectual virtue, namely contemplation.

Put in these terms, if Aristotle maintains that the human good is an encompassing good throughout the bulk of the *Nicomachean Ethics* only to conclude by asserting the narrow conception in its last book, then he is in an uncomfortable situation.

Even before wondering about matters of consistency, however, the narrow conception of the human good causes concern in its own terms. Surely, one may fear, the narrow conception threatens to be excessively narrow. After all, the virtuous person is expected to have friends, and is expected to be just, and to do so because her human fulfilment consists in the expression of virtues which are ineliminably social in character. Elsewhere Aristotle will assert, in keeping with this broad conception of the human good, that

humans are *by nature* political animals, that indeed their essential traits lead them to form social associations (*Pol.* 1353a7–18, 178b15–30).[24] If it were now to turn out that the human good consists solely in contemplation, and that all we do we do for the sake of contemplation, then nearly all of our actions will ultimately be directed at something solitary and fundamentally asocial, something more godlike than human.

In fact, Aristotle does seem to assert that we should strive to be as godlike as possible (*EN* 1177b26–1178a2), where he conceives god's activity as restricted to a remarkably austere form of self-referential contemplation (*Met.* 1074b29–30). If all is done for the sake of those rare moments when we can ourselves reach up and cross the intellectual threshold into the realm of the divine, then we are rarely flourishing, since our moments of contemplation will only seldom punctuate our otherwise animal lives of eating, drinking, and socializing. Moreover, it will seem on this narrow conception that *nothing* but this lofty form of activity will be intrinsically valuable, since all will be done for the sake of something beyond itself. So much then seems to ignore that we are human *animals*, preferring instead to pretend that we are human godlets.

Now, the general tension encoded in these broad and narrow conceptions of the human good has spawned a vast literature.[25] Here we can only gesture towards two sorts of resolutions, the first giving way to the complexities of the second. These resolutions attempt to avoid concluding directly that Aristotle has contradicted himself. That is, of course, a possibility. Another possibility of the same general tendency would not ascribe a contradiction to Aristotle but allow that he must somewhere simply have changed his mind, as many of us often do, since the views are inconsistent with one another, and we in any case have independent reason to think that the last book of the *Nicomachean Ethics* cannot form one part of a unified work whose other parts include the first nine.[26] Whatever such independent reason may amount to, we should appreciate that the problem introduced here in principle admits of a number of resolutions.

This may be in part because the (seeming) contradiction between the encompassing and narrow conceptions gives rise to a

range of distinct problems. The first sort of resolution is rather deflationary, though it need be none the worse for that. It bears immediate notice that Aristotle is aware of some tension in this direction and is prepared simply to rank forms of happiness. After ending *Nicomachean Ethics* x 7 by insisting that the life of contemplation 'will be the happiest' (*EN* 1178a8), he opens the next chapter by observing:

> Second happiest the life led in accordance with the other sort of virtue; for activities of this sort are human. For we do just things and courageous things and the other kinds of things in accordance with this sort of virtue in relation to one another . . . and all of these appear to be human.
>
> (*EN* 1178a9–14)

One easy thought would then be this: happiness admits of degrees, the best happiness is contemplation, but the second best happiness, which is genuine happiness all the same, is the sort which embraces all forms of human virtue, intellectual and moral alike. There will then be a threshold to cross for happiness, above which some will be happier than others, though all will be, so to speak, fully happy. Suppose that in order to attain first-class honours a student must score above 95 per cent on her final examinations. One student scores an admirable 95.1 per cent and another an astonishing 99.9 per cent. Both have, fully and completely, earned first-class honours; neither is more first-class than the other. Still, there is a fair sense in which one has achieved more than the other, and is thus more honourable. In the case of human happiness, judgments of scale are fully appropriate, because happiness consists in actualizing a functionally specified final good, and functional kinds are scaled kinds.

Of course, this sort of deflationary resolution may be fine as far as it goes, but it does not go far enough. That is, even if correct, it fails to address an underlying concern regarding the question of whether actions done *for the sake* of happiness must be regarded as having merely instrumental value. For surely actions done for the sake of an end beyond themselves may also be valued in themselves

as well. Moreover, one might expect a human life to comprise all manner of good activities, things done for their own sake, and not all exclusively subordinated to one unified goal. In this sense, our worry about narrow versus embracing conceptions of the good gives way to a worry which may have been nagging us already from the very first sentences of the *Nicomachean Ethics*: as the work opens, we learn that every action aims, ultimately, at some one good.[27] What, then, is the relation of things done on behalf of this good and the good itself?

Already in the first book of the *Nicomachean Ethics* Aristotle had maintained that the human good is 'an activity of the soul in accordance with virtue (or excellence, *aretê*), and if there are many virtues, then in accordance with the best and most complete' (*EN* 1098a16–18). Looked at one way, this may be paraphrased as ' . . . and if there are many virtues, then the human good will be an activity identified with the one which is best and most complete among them'. Looked at another way, this may mean ' . . . and if there are many virtues, the human good is an activity identified with the best, most complete virtue'. According to the first paraphrase, there is to be some one virtue, selected as best from among them all, in whose expression the human good will consist. According to the second, the best virtue will not be thought of as competing with other virtues. Rather, if there is a plurality of virtues, the most complete package of them will be the human good. This is roughly the difference between saying that if there are many beautiful flowers, what is best will be the single most beautiful flower among them *as opposed to saying* that what is best will be the most beautiful bouquet of them all, which will surely feature the most beautiful among them.

Which does Aristotle intend? The matter is disputed, and in a certain way turns on a linguistic matter concerning the question of what it means to say that S does *a for the sake of b*.[28] There seem to be at least two ways in which S might do *a for the sake of b*. S might have her teeth drilled in a painful manner for the sake of dental health. In such a case, the goal is extrinsic to the action done for its sake. On the other hand, S might go to the opera, have a nice post-opera dinner, and spend the next day visiting a grand cathedral

all for the sake of having a nice vacation. When he does these things, S pursues them for the sake not of something extrinsic to the actions themselves; the activities he pursues are on the contrary partially *constitutive* of a good vacation.

Given that some means are constitutive of the ends to which they are means, it remains open that Aristotle is thinking of a range of human goods done both for the sake of happiness and as desired in themselves. Presumably, given Aristotle's unmistakable emphasis on the centrality of rationality in his characterization of the human good, one must expect that any collection of constitutive means will, perforce, minimally be a well-structured expression of intellectual virtue, rather than an assorted motley jumbled together with no internal order. If that is so, one may read Aristotle's conception of the human good as both intellectual and encompassing: intellectual in the sense that it gives pride of place to contemplation and encompassing in that non-contemplative virtuous activity will display a rationally balanced structure, one likely resulting from deliberation regarding the optimal form of life for creatures with features of the sorts human beings manifest essentially.

Of course, these initial suggestions are intended to open rather than close a central controversy surrounding the theory of human happiness propounded in Aristotle's *Nicomachean Ethics*. When investigating these matters further, it serves to reflect upon a sometimes unduly neglected aspect of the theory Aristotle develops in that work, namely that its account of human goodness cannot be shorn from the metaphysical psychology undergirding it. The question of human happiness, as Aristotle understands it, is a question *about human beings*, and is accordingly a question whose answer must be rooted in facts about such beings, including centrally the fact that humans are intentional agents acting for ends. It emerges from his essentialism that human ends are not chosen by human whim, but given by human nature. Consequently, Aristotle concludes, those seeking happiness discover rather than concoct their human ends; when they do, they may order their actions rightly, that is, towards the actualization of their specifically human capacities.

8.8 CONCLUSIONS

When compared with his other less user-friendly works, Aristotle's *Nicomachean Ethics* may appear relatively accessible and non-technical. In some respects, this appearance is accurate. The work is not so heavily replete with Aristotle's characteristic terminology as are some others. Moreover, in part because it is informed by the close observation of the actual moral psychologies, some passages in the *Nicomachean Ethics* resonate readily with our own observations of the virtuous and the vicious. To some extent, the non-technical character of the work reflects Aristotle's own stated judgment that undue precision is inappropriate to ethics, since excessive exactness imposes a demand on the human sciences which is more appropriate only to other more austere and abstract enterprises, like mathematics (*EN* 1094b11–14, 1098a28–34). The study of ethics must be responsive to the contingent vagaries flowing through human conduct; to expect the production of precise formulas suitable to every possible circumstance will dispose us to indulge in idle digressions incapable of providing us with the action-guiding principles we seek.

So much acknowledged, it must also be said that in many more important ways the appearance of accessibility and non-technicality in the *Nicomachean Ethics* is deceptive and misleading. Although he does not pause to attract attention to the fact, Aristotle's ethical theory draws heavily upon his metaphysical and psychological theories. Because he is interested in the best life for *human beings*, he takes it for granted this will be the life of those beings whose essences and natures he has already explored and characterized elsewhere. Indeed, in the first instance, Aristotle's ethical theory presupposes that human beings have an essence of a determinate and stable sort, and that consequently when it comes time to determine what is best for such creatures it will be necessary to advert to their core, essential features. This is why Aristotle does not feel the need to inveigh at length against subjectivist conceptions of happiness: since we are talking about the good for humans, and humans are a certain way by nature, those who suppose that happiness consists in simple desire satisfaction will have failed to come to terms with

a central and inescapable fact about desire: people can and do desire things which are bad for them, with the sad result that people can and do live suboptimal lives. These are, then, lives they would really rather not be leading, lives they would not have desired had they fully apprehended how best to pursue their own flourishing.

Looked at from this perspective, Aristotle's celebrated function argument is both less ambitious and more successful than is sometimes supposed. He does not presume that by this argument he can *prove* that human beings have a determinate nature, a specifiable function, and a characteristic good. Rather, he seeks mainly in this argument to *identify* the human function he has elsewhere analysed and thereby to characterize that good which is best for human beings. This good, he argues, will be one which is good in itself, good for nothing beyond itself, complete, and such that its presence will make a life lacking in nothing. Such a good we may term *eudaimonia* – happiness or human flourishing. Without explication, however, no such term is terribly informative. We all say that we want happiness. If we disagree about what happiness consists in, then our verbal agreement merely masks other deep and important disagreements about life's most precious prize. If we accept an objective conception of happiness rooted in features of the human essence, then it makes sense to inquire, as Aristotle inquires, into those human features whose best expression yields the optimal sort of life available to us.

Aristotle takes it as obvious, almost beyond question, that each of us desires the best life we can secure for ourselves. Accordingly, once we have moved beyond the facile thought that the best life is whatever we happen to suppose it to be, then inquiries into human virtue (or excellence; *aretê*) of the sort engaged by Aristotle in the *Nicomachean Ethics* make perfect sense, and are, for the reflexively enlightened, almost inevitable. After all, suggests Aristotle, if we want what is good for ourselves, what is really good and not merely what happens to appeal to the whim of the moment, then it behoves us to explore what that good might be. Any such exploration will take us outside of our current subjective preferences, which may be enlightened or may be benighted, and into a consideration of the character of human excellence.

Since such excellence is trivially the excellence of human beings, we would be wise to begin our inquiry into the human good with a clear-headed conception of the character of human nature. In pursuing this inquiry, Aristotle presupposes an essentialist framework articulated within his four-causal explanatory schema, with its ineliminably teleological components. Although he does little to argue for this framework within the *Nicomachean Ethics*, Aristotle plainly presupposes familiarity with its basic precepts when advancing this brand of virtue ethics. For this reason, the *Nicomachean Ethics* is, so to speak, surreptitiously technical. Consequently, an eventual appraisal of Aristotle's ethical theory will equally implicate the sympathetic critic in a consideration of the psychological and metaphysical theories underpinning and informing it. To the degree that those theories are defensible, Aristotle's ethical theory will have much to commend it. By the same token, where those theories fail to withstand criticism, they may tend to leave Aristotle's ethical *eudaimonism* stranded, in search of the moorings without which it will be best left unembraced.

FURTHER READING (* = ESPECIALLY SUITED TO BEGINNERS, IN TERMS OF CLARITY OR ACCESSIBILITY)

Primary Sources

Aristotle, *Nicomachean Ethics*, esp. i, ii 1–6, iii 1–7, v 1–2, 7–10, vi 1–8, 12–13, vii 1–3, viii 1–3, 9, ix 4, 7–9, 12, x 4–9

Secondary Sources

Bostock, David, *Aristotle's Ethics* (Oxford University Press: 2000)

Broadie, S. and Rowe, C. J., *Aristotle: Nicomachean Ethics*, translation, introduction, and commentary (Oxford University Press: 2002)

*Hughes, Gerald J., *Aristotle on Ethics* (Routledge: 2001)

Irwin, Terence, *Aristotle, Nicomachean Ethics*, with notes and annotated glossary (Hackett: 1985)

*Kraut, Richard, 'Aristotle: Ethics', *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu/entries/aristotle-ethics/)

Kraut, Richard, 'Two Conceptions of Happiness', *Philosophical Review* 88, (1979), pp. 167–97

Kraut, Richard, ed., *The Blackwell Guide to Aristotle's Ethics* (Blackwell: 2005)

Pakaluk, Michael, *Aristotle: Nicomachean Ethics Books VIII and IX*, translated with a commentary (Clarendon Press: 1998)

Woods, Michael, *Aristotle's Eudemian Ethics Books I, II, and VIII*, translated with a commentary (Oxford, Clarendon Press: 1982)

Nine

Political Association

9.1 THE ORIENTATION OF ARISTOTLE'S POLITICAL THEORY

Aristotle's *Politics* follows closely upon his *Nicomachean Ethics*. Where the *Ethics* describes the human good, the *Politics* provides a prescriptive recipe for its attainment. Political science, like ethics, is a practical science,[1] dealing with fine action, and seeking ways to implement the human good. Indeed, Aristotle ends his *Nicomachean Ethics* by characterizing political theory as a continuation and completion of that work (*EN* 1181b12–23). There he recommends, in keeping with his general methodology, that the political scientist should begin by sifting through the positions of earlier thinkers and studying as many actual political systems as possible,[2] so that he might determine which sorts of systems undermine or preserve cities and which sorts permit their governors to conduct politics well or poorly. The *Politics* does carry out these tasks, though as we currently possess it not in the order initially suggested.[3] It is likely, in fact, that the work was stitched together by an editor after Aristotle's death, though this does nothing to vitiate the worth of the material it contains, for it is genuinely Aristotelian and plainly reflects his judgments about the sorts of socio-political arrangement best suited to serve the cause of human flourishing.

As a practical science, political science takes as its end the realization of the human good. Thus, Aristotle's fundamental outlook in the *Politics* does not seek to legitimate the state or justify its authority as an abridgement of antecedently or independently

existing rights. On the contrary, if we begin with a strongly individualist hypothesis of a sort commonly presupposed in modern liberal political thought, to the effect that an individual is a free and rights-bearing agent the restriction of whose liberties requires justification and defence, we will miss a fundamental orientation of Aristotle's political thought. One way of seeing this contrast is to envisage Aristotle's attitude towards a state of nature hypothesis of the sort introduced by some later. In some construals of this hypothesis human beings may be regarded, at least hypothetically, as dwelling fully formed in a state of nature, possessed of certain inalienable rights, whether God-given or simply underived and natural. Aristotle firmly rejects this sort of conception of human rights. He contends, on the contrary, that a stateless person is barely – or not at all – human.[4] Minimally, human beings *need* the state to become fully actualized humans. Thus, the state needs no justification: its function is to permit humans to realize their ends. Since humans have objectively given ends which they naturally pursue,[5] the state too will prove itself to be a natural body.

Now, two cautions are in order about these contentions. First, while Aristotle does not suppose the state needs any justification *as an abridgment of antecedently given rights*, he does believe that he must defend the *naturalness* of the state against the sophistic suggestion that all laws, and hence all states, are conventional. Aristotle in fact devotes much of the first book of the *Politics* to just such a defence. Second, we must also take care with the free use of the term 'state' when characterizing Aristotle's political theory. If we are prepared, as is customary in contemporary political discourse after Weber to distinguish *state* and *civil society*, then we will likely distort Aristotle's actual defence of the polis as a natural political institution. If we understand a state to be an association with a territory claiming a monopoly on the legitimate use of force, then we can readily distinguish states from civil societies, which comprise a full network of social and family relations, economic practices, and religious organizations. We might after all, as anarchists indeed wish we would, organize ourselves into stateless civil societies. By contrast, when Aristotle speaks of the polis, he has in view a social organization which, in these terms, comprises both state and civil

society. Accordingly, when speaking of the 'state' in Aristotle, we must bear in mind that he thinks comprehensively about our political and social organizations, and is not at all disposed to mark the sort of distinction reflected in Weber's approach. There is, of course, a substantive and intriguing question as to whether a preferred holistic conception of the state is preferable to its modern counterpart; but as regards understanding his political naturalism, it is imperative to appreciate that the polis, his basic political institution, embraces the full range of features found in civil society in addition to the various forms of political authority he considers.

Indeed, given the kinds of relationships constitutive of civil society, Aristotle's political naturalism becomes easier to appreciate. He contends, strikingly, that a human being is *by nature* a socio-political animal (*politikon zôon*; *Pol.* 1353a7–18, 178b15–30),[6] that is, a being whose ends are served by the existence of a state, without the framework of which human flourishing would be impracticable if not indeed unfathomable. When we think of the state as comprising familial relationships, this contention seems less alien and certainly less tendentious. Although we need to take care when approaching Aristotle's suggestions that the polis is natural, and that human beings are by nature political animals, it is relatively easy to appreciate why he might think that humans naturally tend to congregate themselves into familial and social groupings of various sorts, well before questions of political hegemony enter the scene.

Part of Aristotle's contention in this regard is thus uncontroversial and almost pedestrian. We require the basic necessities of food and shelter in order to live, and though we could in principle forage for food and sleep in caves, a modicum of specialized exchange serves to meet the needs of our most basic, animal survival (*Pol.* 1252b12–14). Even so, another part of his contention is less innocent. For the role of the polis extends much further. Aristotle does not think that its role is limited to the provision of basic necessities: 'it comes into being for the sake of living, but it remains in existence for the sake of living well' (*Pol.* 1252b29–30; cf. 1253a31–37). The claim that the polis has as its *raison d'être* living well, as opposed merely to living, shows clearly

that Aristotle thinks of it as required for human happiness or flourishing, for *eudaimonia*, which consists not only in bare survival, but in the actualization of a full range of moral and intellectual virtues.[7] It follows, Aristotle infers, that the polis provides the sole framework within which human happiness may flourish. Thus, just as it is in the nature of a human being to be happy, so it is in the nature of a human being to form associations capable of supporting and sustaining happiness. This is why humans have both a natural capacity and a natural impulse to form a polis (*Pol.* 1253a7–18, a29–30; cf. 1278b17–20).[8] Looked at from the other direction, a polis is natural because it develops naturally out of rudimentary communities capable of furnishing frameworks for some human needs, but not for the highest expression of human virtue.

Aristotle thus sees an intimate, symbiotic connection between human nature and socio-political association, an approach clearly rooted in his teleological conception of objectively given human happiness. His approach presupposes that humans have a certain and determinate nature, with the result that their political communities exist by nature and not merely by convention. Unsurprisingly, Aristotle's political theory appeals to his metaphysical and psychological theories, just as his ethical theory has done. Because ethical and political theory are sister sciences for him, no full understanding of the one can proceed without an appreciation of the other. Both sciences appeal to Aristotle's conception of human nature and thus both equally presuppose the essentialism underlying that conception. Altogether, then, we may say that ethics and political science are practical, insofar as they strive to reach the end of fine action; they are natural, insofar as fine action consists in the expression of human nature; and they are theoretical insofar as they draw upon the conception of the rational human essence whose attainment they seek to advance.

9.2 THE EMERGENCE AND PRIORITY OF THE POLIS

The suggestion that the polis exists *by nature* is the cornerstone of Aristotle's political naturalism. Such a naturalism may be usefully contrasted with some later political theories prepared to regard the

state as wholly conventional. Thus Hobbes begins his *Leviathan* with the bald assertion that 'by art is created that great LEVIATHAN called a COMMONWEALTH of STATE–in Latin CIVITAS'.[9] On this approach, taken to one extreme, the state is a conventionally existing construct, created by interlocking sets of agreements, implicitly or explicitly contractual, and subject to dissolution should the terms of the contract be violated. The parties to such a contract stand before and after its enactment as complete human beings. They therefore exhibit no form of dependence upon the state. They create a state when they deem it in their interest to do so, but otherwise take no interest in the matter. On this approach, at its extreme, the state's laws are only as natural as the rules of cricket.

Aristotle's political naturalism appears as the antithesis of this sort of view. The polis exists by nature; human beings have a nature whose realization partly depends upon the polis; and, in fact, strikingly, in some sense the polis is *prior* to the individual:

> The polis is also prior in nature to the household and to each of us individually, since a whole is necessarily prior to its parts. For if the whole body has perished, there will no longer be a foot or a hand, except homonymously, as one might speak of a stone hand, for a dead hand will be like that; but everything is defined by its function and by its capacity; so that in such conditions they should not be said to be the same things, but homonymously so. Hence, that the polis is natural and prior in nature is clear. For if an individual is not self-sufficient, he will be like all other parts in relation to the whole. Anyone who cannot form a community with others, or who does not need to do so because he is self-sufficient, is no part of a polis. He will, accordingly, be either a beast or a god.
>
> (*Pol.* 1253a20–29)

Plainly, if it is prior to the individual, then the polis cannot be a mere artifice.[10]

Several of Aristotle's contentions in this passage are intriguingly extreme. First, the thought that the polis should be prior to the individual seems to accord a kind of natural autonomy to the state

which is difficult to credit. It is one thing to suggest that the polis develops in an organic sort of way from simpler forms of communal associations, but quite another to contend that the state somehow exists *prior* to the individual. Clearly the priority is not temporal. Is the priority then somehow to be determined along an axis of worth or value? Still more extreme is the suggestion that a human being who is not a member of a polis is only *homonymously* a human being.[11] Given that the form of homonymy appealed to here requires that a human being not in a polis is not really, or properly speaking, a human being at all – is a human being no more than a stone eye in a statue is really or properly speaking an eye – then it may seem to follow, incredibly, that a human being stranded on desert island with plenty to eat and drink is not, after all, a human being.

Any approach to Aristotle's political theory may be expected to benefit from an inquiry into these surprising-sounding claims. Because priority and naturalness go hand in hand in Aristotle's theory, it is helpful to consider them in tandem. Looking first to the priority of the polis, it is important to understand Aristotle's conception of its general form and its historical or quasi-historical emergence. Aristotle recounts a series of social arrangements, each more sophisticated than the last, culminating in the polis. He thinks of each stage as a teleological development headed towards the polis, that is, that each stage is a natural development which is best understood as a striving towards the ultimate goal of the polis. From most primitive to most sophisticated, these are:

- Like other animals, humans have a drive to reproduce and thus to engage in sexual activity; thence there comes together, mainly on the basis of exigency, a simple household (*oikia*) (*Pol.* 1252a27–30; *EN* 1242a22–26).
- Households, seeking to satisfy everyday needs, including, evidently, economic security and protection against human and animal threats, form permanent associations in the form of a village (*kômê*) (*Pol.* 1252b12–22).
- Several villages, driven by an impulse towards self-sufficiency, form a polis, which is their natural end (*Pol.* 1252b27–1253a4).

Each development Aristotle regards as natural, which is not to say inevitable, where the naturalness envisaged extends to the internal relations operative at each stage.

Crucial to understanding this natural trajectory is its straightforwardly teleological character: the polis, Aristotle says, is the end (*telos*) of the villages, households, and individuals leading to it (*Pol.* 1252b31). Herein resides the clearest explanation of the form of priority he envisages for the *polis*. It is not the claim that polis matters and the individual does not or that the good of the individual is to be ruthlessly subordinated to the good of the state and sacrificed should they come into conflict. On the contrary, the organic character of Aristotle's teleology suggests a different sort of view: Sarah's eyes are *for seeing*, that is, for *Sarah's seeing*, such that her good partly consists in the good of her visual capacity. Thus, when Aristotle treats the polis as the end of a human individual, he does not thereby denigrate the worth of that individual. On the contrary, the teleological story he tells envisages a much more symbiotic relation between state and individual, predicated upon intricate forms of mutual interdependence between them.

This suggests that among the many forms of priority he identifies, Aristotle is interested in a kind of teleological priority, a kind of priority according to which the end of the polis is more comprehensive or more complete as an end than the ends of the citizens who are its parts. That, at any rate, seems the nearest implication of this appeal to the parts of the body: functioning parts of the body are posterior to the body because their ends are subservient to its. A heart pumps blood for the sake of the health of the body; a body does not live and reproduce for the sake of the heart's pumping blood. If, then, Aristotle is primarily interested in teleological priority, we find in him the following sort of argument for the *priority of the polis* (**PP**):

1 In a teleological system T, its functional parts, that is those parts of T whose function depends upon the function of the whole, are *less* complete than T.
2 A citizen is a part of the polis such that his function depends upon the function of the whole.

3 Hence, a citizen is less complete than a polis.
4 If a citizen is less complete than a polis, the polis is prior to the citizen.
5 Hence, the polis is prior to the citizen.

The first important consequence of this argument is negative: the teleological priority of the polis does not provide any reason to suppose that citizens have no value of their own.

The thought behind (**PP**-1) is a simple application of Aristotle's view about teleological ordering, of a sort familiar no less from his biology than from his ethics. In Aristotle's biology, we repeatedly find the teleological priority of the soul over body, because the body is constituted as it is for the sake of the soul (*PA* 641a14–32, 646b10–35). In the *Nicomachean Ethics* we saw the demand that the *final* good be self-sufficient (*autarkês*) and complete (*teleion*),[12] with the result that lesser goods were posterior to the best good along just those dimensions. Aristotle's appeal to completeness and self-sufficiency in that connection is again immediately relevant to the polis, since in the *Politics* it is precisely the citizen's lack of self-sufficiency which grounds and justifies the priority of the polis (*Pol.* 1253a19–30). A person without a polis would lack the full range of self-sufficiency required for human flourishing, ranging form the basic necessities of life all the way to friendship of the finest form, which includes dialectical engagement with other citizens of similarly fine virtue.[13] To that extent, the teleological priority of the polis may seem unobjectionable: a citizen without a polis is not self-sufficient, though a polis without this or that citizen may be perfectly self-sufficient and complete.

Matters are, however, not altogether so simple. If we grant that the priority of the polis consists primarily in its being a more complete end than the ends of its parts, we are nonetheless confronted with an initially bewildering consequence which Aristotle seems perfectly content to accept. In illustrating the form of priority envisaged, Aristotle appeals to the body and its parts, suggesting that just as a functional part of a body when severed from the body is no longer what it is except *homonymously*, so a

human being without a polis is not a human being except homonymously. Now, whatever we are to make of the teleological priority of the polis, that consequence seems altogether extreme – so extreme, in fact, that it seems to many plainly false. It results in what has been called the *Philoctetes objection*.[14] The problem derives its name from Philoctetes, who, as a leader of a small fleet of ships heading to Troy, had the misfortune to be bitten by a snake while stopped at an island for the purposes of making a sacrifice. His fetid wounds refused to heal, causing him to writhe and scream in agony, and producing an odour so noxious that it drove his shipmates from discomfort to distress. At the behest of one among them, Odysseus, the Greeks abandoned Philoctetes on the uninhabited isle of Lemnos, where he kept himself easily alive by means of a god-given bow unfailing in its accuracy. There he remained for many years, until the Greeks were instructed that they would never take Troy without the assistance of Philoctetes' bow, at which time they returned to Lemnos to recover it, and along with it, if necessary, Philoctetes.[15]

The relevance of this bit of mythology to Aristotle's commitment to the priority of the polis is just that his argument may seem to entail something perverse, namely that Philoctetes was not a human being while living on Lemnos. After all, he was not a part of a polis during that time and Aristotle insists that a human being without a polis is exactly like an eye in a statue: it may be called an eye because it outwardly resembles a real eye, but it is not, strictly speaking, an eye at all. The upshot seems to be that Philoctetes is not a human being, but rather simply appears to be one on the basis of his external appearance. Thus, the *Philoctetes objection* (**PO**):

1 All things are defined by their functions, such that what loses the function of F is not an F except homonymously.
2 Some human being S has the function of a human being only if S is a member of a polis.
3 Hence, if S is without a polis, S lacks the function of a human being.
4 Hence, if S is without a polis, S is not a human being except homonymously.

Since *S* is just an arbitrary human being, it follows that if he is without a polis, Philoctetes is a human being only homonymously. It follows, then, that he is not a genuine human being at all. Since that seems patently false, it further follows that Aristotle's account of the priority of the polis must be abandoned.

Aristotle cannot readily deny (**PO**-1), since this is a deeply entrenched metaphysical principle of his, namely his functional determination principle.[16] The second premise (**PO**-2) seems the likely culprit. Still, it is not easily denied, since Aristotle seems simply to assert it, when he compares the polis-less person to a merely homonymous body part, that is, one which when detached is more like a part in a painting or a statue than a genuine part. Indeed, he seems to cement the inference when he says that someone without a polis is 'either a beast or a god' (*Pol.* 1253a29–30), where, in either case, we have something non-human.

One possible way of muting the force of the objection would be to rethink what is meant by (**PO**-2). First, (**PO**-2) admits of a stronger and a weaker reading. According to the strong reading, Aristotle means that something is a human being – has the characteristic function of members of that species – only if it is a member of a polis. More weakly, according to the second reading, Aristotle means only that a human being cannot *exercise* the function of a human being without being a member of a polis. Second, even if we assume the stronger reading, Aristotle may be thinking about a truly extreme case, where the human in question is not a mere Philoctetes, who is reared in a polis and then cut off, but a hypothesized beast who, let us say, is reared in the wild by wolves or monkeys. Now, it is plain that such a being would be, from a biological point of view, a human being. In any event, a DNA test would be conclusive. Still, Aristotle might suggest that the biological point of view does not trump every other way of taxonomizing the animal in question (to put the matter neutrally). Let us suppose that the animal had no capacity for speech or socialization, that its language-learning abilities had permanently atrophied, and that it conducted itself precisely like a monkey.

Indeed, let us take the imaginative case one step further and suppose that, freakishly, two monkeys gave birth to a mutant

monkey who was, from the DNA point of view, genetically a monkey but looked, to all exterior appearances, like a little human. It is unclear in the last case that we should insist that the being is a human. Aristotle would be comfortable with the judgment that it was not a human, except homonymously. Moving back slightly towards the realm of the real, the imagined feral monkey-raised human might be behaviourally little different from its monkey-born counterpart. In that case, we might again be willing to entertain the suggestion that it is only homonymously human – especially if, without recourse to certain deep tests, we simply could not distinguish the monkey-born from the human-born creature.

Now, these speculations are not intended to show that the Philoctetes objection might be summarily rejected. On the contrary, the objection remains forceful and requires further investigation. Still, it is not necessary to suppose that it devastates Aristotle's commitment to the priority of the polis. For that commitment arose, in the first instance, from his prior commitment to the effect that a human being could not flourish without a polis, because a human being bereft of any social interaction would be incapable of attaining self-sufficiency. Self-sufficiency, in turn, had been laid down as a constraint on human flourishing: no human could be happy without realizing a state which would be such that its presence would make a life lacking in nothing.[17] As a regulative ideal, Aristotle's prior commitment to self-sufficiency does not seem, on its surface, in any way obviously objectionable.

The tenor of this response to the Philoctetes objection is to refocus attention on the well-being of the individual. To some extent, then, the force of the response will require a de-emphasis of Aristotle's strongest statements regarding the priority of the polis in favour of the individual, perhaps by reading (**PO**-2) in the weaker way, so that Aristotle means only no human could *express* the human essence without being a member of the polis. Such a reading would result in a concomitant softening of the conclusion, so that Aristotle's meaning would be, paraphrastically, only that a human being without a polis would be so roundly deprived of the requirements of human happiness that we would

regard them as for intents and purposes inhuman. In this weaker sense, humanity could be readily restored by re-integration into a polis. The *Politics* provides sufficient warrant for this sort of response, though there is a genuine question concerning the final force of Aristotle's commitment to the priority of the polis over the individual. In any event, some of Aristotle's characterizations of the good of citizens tend to undercut his most extreme characterizations of the priority of the polis, thus at least introducing some tension into his view.

For example, Aristotle regards political rule as exercised over enfranchised citizens who are free and equal. He also shows himself comfortable, however, with the simple judgment that 'a free man is for his own sake and not for the sake of another' (*Met.* 982b25–26). It is thus not terribly surprising to find him asserting that it is necessary that citizens partake in common of the advantages of the polis, if they are to be regarded as citizens in the first instance (*Pol.* 1178a30–32). This states or strongly suggests that the good of the polis resides in, or, more modestly, is constrained by, the goods attending to its individual citizens. If this is so, one might conclude, the polis is after all not prior to the good of the individual. On this approach, no citizen is a mere instrument to the nebulous good of a pre-existing state capable of sacrificing the individual to its individual-insensitive ends.

In this connection, it is important to emphasize that the polis comes into existence for the exigencies of living, but persists for the sake of *living well* (*Pol.* 1252b29–30, 1278b17–24, 1280b39, 1325a7–10). Aristotle's contention that the polis persists for the sake of living well is intended to draw upon the conception of human happiness developed and defended in the *Nicomachean Ethics*. In that work, as we have seen, there is some question concerning whether the best human life is a life of serene contemplation or rather a politically engaged life conducted in accord with high rational standards.[18] In the present context, this dispute need not be re-engaged, except to say, in a general way, that the best human life is an expression of rationality, which demands beyond the satisfaction of life's basic needs the leisure to execute a rationally directed life plan. If that is so, and the end or purpose of the polis

is precisely the realization of such activity, it is difficult to credit the suggestion that individual human interests are posterior to the polis in such a way as to threaten the advancement of the good of the polis *over* or *to the exclusion* of the individual goods of its citizens.

That said, Aristotle does persist in the *Politics* in expressing what appear to be incautiously strong statements regarding the priority of the polis. Thus, in addition to the evidence we have already considered, we find him suggesting in the last book of the *Politics* in connection with his justification of compulsory education:

> Since the whole polis has one end, it is manifest that one and the same education should necessarily be one and the same for all, and that it should be public, not private, not as it is now, when everyone cares for his own children separately and provides the sort of instruction he thinks best. The training in matters common to all should be common. Neither should one think that any one of the citizens belongs to himself, for all belong to the polis, and each is a part of the polis, and the care of each part naturally looks towards the care of the whole.
>
> (*Pol.* 1337a21–30)

In view of such strong language, some commentators simply regard Aristotle as inconsistent: he regards the polis as both prior and posterior to the individual.[19]

One conclusion short of regarding Aristotle as inconsistent would be to trace out distinct forms of priority and posteriority for the citizen and the polis. There is no contradiction, that is, if the polis is prior to the citizen along one dimension and posterior in another, while the citizen is posterior and prior to the polis in the appropriately counter ways. Thus, a child depends upon its mother for sustenance and love, while a mother depends upon her child for the propagation of her genetic line. There is no threat of contradiction in this state of affairs. So, if there are similar sorts of distinctions to be made in the case of the complex relations between polis and citizen, no inconsistency need threaten. One route to this conclusion begins by taking one of

Aristotle's governing illustrations at face value: the citizen is to the polis as a part of the body is to the body (*Pol.* 1253a20–29). In some respects, a part of the body is prior to the body: after all, a body cannot function without a heart. On the other hand, what it is to be a heart depends upon the functional role the heart plays within an organic body. If this is correct, a heart is *definitionally* tied to the body, though the body is *operationally dependent* upon the heart. Here, in the abstract, we have crisscrossing forms of dependency, though no threat of inconsistency. Exporting these relations to the polis–citizen relationship is obviously no trivial matter. Still, as a first approximation, one might suggest that in Aristotle's view, a human being is functionally dependent upon the polis, a naturally existing entity without which the human could not (fully) flourish, while the polis is operationally dependent upon its citizens, without whose co-ordinated activities the polis would cease to exist altogether. From this perspective the good of the polis is intimately bound up in the good of its citizens, even while their good requires and indeed resides in the full flourishing of the polis. This, though, is just as the model of body and bodily part prescribes.[20]

9.3 THE BEST CONSTITUTION

If the end of the polis is the flourishing of its citizens, then a polis may be judged by the degree to which it realizes that goal. As an empirical political scientist, Aristotle organized the collection of the constitutions of some 158 different states; but he also argued from reasonably abstract principles to a definite ordering of ideal constitutions. Thus, the *Politics* divides into two related enterprises (*Pol.* 1288b21–1289a25): (i) an investigation of the best type of constitution in fact available, given material and other circumstances, a discussion tempered by practical considerations of implementability (*Pol.* iv–vi); and (ii) a consideration of the ideal polis, measured against its proper function, namely the provision of the good life for its citizens, which may be assumed for purposes of idealization to be perfectly virtuous (*Pol.* vii–viii). Insofar as we have been considering the development of the polis

and its relation to its citizens in terms of its ultimate end, we will focus primarily on the ideal constitution.

Aristotle treats a constitution (*politeia*) quite simply as a way of organizing those who inhabit the *polis* (*Pol.* 1274b36–38), as a system of order specifying its ruling class and those with authority over others (*Pol.* 1278b11, 1278b8–19, 1289a15–18).[21] Relative to the end of the polis, constitutions may be readily divided into those which are broadly correct and those which are deviant:

> Constitutions aiming at the common advantage are correct and just without qualification, whereas those aiming only at the advantage of the rulers are deviant and unjust, because they involve despotic rule which is inappropriate for a community of free persons.
>
> (*Pol.* 1279a17–21)

The common advantage forms the basis of Aristotle's basic division. It is noteworthy in this connection that he stresses once again the freedom of its citizens as a constraint upon the justice of the polis. Those constitutions diverting goods away from the common advantage towards some subset of inhabitants are thus despotic.

In calling them despotic, Aristotle does not intend to suggest that all deviant constitutions are ruled by a single despot. For it will turn out that even democracy will count as despotic: if in a democracy, the many overwhelm and exclude the interests of the few by subordinating them to their own advantage, then the mass of the majority will prove to be despotic. To take a simple example, if 51 per cent of the population votes to deprive the remaining 49 per cent of their property, then the majority will be despotic regardless of how democratically legitimate their voting procedure may be. In fact, Aristotle observes that deviant constitutions may feature one, several, or a multitude of rulers; but, of course, correct constitutions could in principle do the same. Thus, relying on these principles of organization, Aristotle contends in *Politics* i 7 that there are six possible forms of government (see Table 9.1).

The primary differentiation between the correct and the deviant turns upon whether the rulers, whatever their number, rule in

Table 9.1 Correct and deviant forms of government

	Correct	*Deviant*
One ruler	Kingship	Tyranny
Few rulers	Aristocracy	Oligarchy
Many rulers	Polity	Democracy

such a way as to promote the common advantage of all citizens or rather in such a way as to promote their own advantage to the detriment of others (*Pol.* 1279a26–31). In the course of the *Politics* Aristotle brings other considerations to bear on this general structure, sometimes merely by way of amplification but in some cases to the point of modification. Thus, for example, ever alive to economic dimensions of political relations, Aristotle observes that democracies tend to be rule by the poor and oligarchies are rule by the rich few (*Pol.* 1290a30–b20).[22]

The best constitution is kingship or aristocracy, where a single good man or a group of the best men rule on behalf of the common advantage (*aristos* = 'the best' in Greek). These forms are best because they prove most effective in securing the end of the polis. In arriving at this conclusion, Aristotle considers a number of factors including centrally the demands of justice, the true aims of the ruling class in each constitution, and the conceptions of virtue implicit in their approach to governance (*Pol.* 1280a7–22; cf. *Pol.* iv 1–2, iv 11, and *EN* v 3). Unhappily, the demands of justice are reflected differently in the competing conceptions the different ruling classes bring to their characterizations of governance. Although everyone will assent to the abstract suggestion that justice requires equality for equals and inequality of unequals, says Aristotle, different classes will construe the relevant forms of equality in materially different ways (*Pol.* 1280a7–25). The rich will suppose themselves superior not only in wealth but in other respects as well and so will deem themselves deserving of the greatest consideration, just as the poor but free-born will think that all free men are on an equal footing with respect to justice, whatever their net worth. Aristotle demurs: the first group leads to the deviance of oligarchy and the second to the deviance of

democracy.[23] Neither group has in view the true function of the state, namely the virtuous, good life of its citizens (*Pol.* 1280b39–1281a4); only the best will appreciate that the best form of government requires that political power be based on virtue (*Pol.* 1283a24–26).

In arguing this way, Aristotle assumes that he is justified in drawing upon the account of virtue he has developed at length in the *Nicomachean Ethics* (*Pol.* 1295a34–b1), undergirded as it is by the objective conception of happiness operative in his function argument.[24] According to that conception, virtue is not determined by preference or circumstances of wealth or birth, but by nature: human beings are a determinate kind of animal, a rational animal, with the result that human virtue is an expression of the rational soul common to all humans (*Pol.* 1295a335–40; cf. *EN* 1140a25–26, 1101a14–16). One finds the goal of realizing human virtue in evidence primarily only in an aristocracy, though also, if to a lesser and less stable extent, in a polity, the correct form of rule by the many (*Pol.* 1295b1–1296a20). Whatever the ruling class, however, the best constitution is the one which best serves the goal of attaining a fine and virtuous life for its citizens.

For this reason it is instructive to conclude by considering a sort of limiting case of aristocracy:

> Some raise a problem as to whether it is necessary for the legislator wishing to establish the most correct laws to legislate for the advantage of the best citizens or for the advantage of the majority . . . But one should understand that what is correct is what is *equally* so, and what is equally correct holds in relation to the advantage of the entire polis and of what is common to all citizens. Now, a citizen is one who partakes in common in ruling and in being ruled, though who the citizen is will differ in different constitutions. In the best constitution, however, he is the one with ability and who chooses in a deliberate way to rule and be ruled for the purpose of a life conducted in accordance with virtue. If, though, there is some one person, or some several who are nonetheless insufficient in number to constitute a full complement of a polis, whose virtue surpasses the others to such an extent

> that the virtue and political power of all the others taken together is incomparable with his, or theirs, then one must no longer regard such a man, or men, as a part of the city. For they would be treated unjustly if deemed worthy of equal treatment, given that they are unequal to so great an extent with respect to virtue and political power. For it would be reasonable to regard this sort as a god among men. For this reason it is clear that it is necessary for legislation to concern those equal in birth and power, and that for these other sorts there is no law: for they are themselves law.
>
> (*Pol.* 1283b36–1284a14)

Democracy is not an end or ideal in itself, though, Aristotle allows, democracy can in ideal circumstances eventuate in superior governance – precisely when the many are collectively wiser and more virtuous than the few. Thus, to the extent that democracy is to be defended, it is not because popular sovereignty is desirable for it own sake, but because – and only to the extent that – democratic decision-making promotes the ends of human flourishing. If the purpose of the polis is to boost the lives of its citizens by enhancing their genuine flourishing, then it would be foolish to subordinate someone in a manifestly superior position to effect this end to an inferior political position solely because a greater number preferred an outcome other than the one he recognizes as maximally beneficial. If, that is, the godlike man were to join us on the scene of our lives, and we were to recognize him as such, that is, if we were to regard him, rightly, as a man willing and able to lead us away from our lesser selves and towards our genuine good, then we would appropriately and prudently accord him the political power to do so. It would be odd, suggests Aristotle, if God were among us, to insist that he had but one vote (*Pol.* 1284b25–34).

The godlike man would be a king of kings and the aristocrats' aristocrat. Of course, Aristotle does not anticipate his arrival anytime soon. The point of his introducing such a figure is to illustrate how, in his view, political power is most appropriately distributed from the standpoint of justice and virtue. The goal of political power is not political power, but human flourishing. It

follows that the best constitution – at least as regarded without due consideration given to any genuine impediments there may be to its implementation – will be the one most apt to attain the ideal of human flourishing for the citizens in the polis. This, contends Aristotle, is aristocracy, that is, rule by the best. The limiting case of a godlike figure of virtue so surpassing as to be incommensurably beyond the accumulated virtue of all other citizens combined thus serves to underscore the purpose of a naturally existing polis: it grows by nature and persists so that human beings may live well.

9.4 AN UGLY ASPECT OF ARISTOTLE'S POLITICAL NATURALISM?

On the genetic account of the growth of the polis from simpler to ever more complex forms of sociopolitical association, Aristotle traces the development of the household (*oikia*), an arrangement impelled by our natural drive to reproduce, followed by the development of the village (*kômê*), a larger association encouraged by a desire for stability and security.[25] Already at the first stage, the emergence of the household, we find Aristotle accepting under the rubric of the natural some plainly pernicious power-asymmetries: women are to be ruled by men in virtue of their natural inferiority, lacking as they do authoritative souls, and having only feeble deliberative faculties (*Pol.* 1260a13); and slaves are to be kept as living tools by their masters, since their souls lack deliberative faculties altogether and they are in any case necessary for the life and leisure their masters require for philosophy (*Pol.* 1253b9–32, 1254a10, 1255b36–37). So much illustrates how the normative dimension of *the natural* may extend quickly and quietly beyond its basic framework. The question therefore arises as to whether Aristotle's political naturalism is itself pernicious, whether, that is, it leads unavoidably to such unfounded and reprehensible commitments.

It does not. Appreciating why this is so serves a two-fold purpose. First, it serves the aim of understanding Aristotle's political naturalism: if we can see how an application of his political

naturalism abrogates its own animating precepts, then we can better determine the character and contours of those precepts. Second, it makes possible a sober evaluation of Aristotle's political theory, one not coloured by the justifiable outrage we may feel in the face of his all too conservative political endorsements. That is, we may easily observe from our own comparatively enlightened moral vantage point that Aristotle was a creature of his time; that the attitudes he voices towards women and slaves were more or less settled doctrine, common to the point of near universality (even if he occasionally heard the odd fringe radical voice assaulting the unreflective rectitude of the *status quo*);[26] that Greek slavery was, from the standpoint of vicious abuse, less disgraceful than its Roman or American counterparts; that Aristotle thought masters should befriend their slaves (*Pol.* 1255b9–14, *EN* 1161b1–8); or that Aristotle was indeed indulgent towards his own slaves, freeing them in his will after his death.

Such apologetics are mainly banal. Moreover, they tend to obscure an important fact about Aristotle's justification of slavery: he overtly considers and expressly rejects the suggestion that slavery is unjust. It is not, then, that he is benighted by being parochial. Matters are both better and worse than that might tend to suggest. Aristotle agreed that those enslaved by the violence of law and not by nature were unjustly enslaved; but he equally thought that some men are natural slaves, for whom it is a positive benefit to be enslaved.

In fact, Aristotle makes a series of startling assertions regarding natural slavery. Some people are born to be slaves because they lack any deliberative rational faculty and hence cannot be morally virtuous (*Pol.* 1260a9–b20). Such slaves are *completely* owned by their masters. That is, as Aristotle puts the matter, 'A master is merely the master of his slave, but is not otherwise his, whereas a slave is not only the slave of a master, but also belongs to him completely' (*Pol.* 1254a11–13). This, he explains, is generally the case with parts of wholes and bits of property. If I own a hammer, I wield it as I please, but it bears no relation to me beyond being mine. Further, it is *better* for natural slaves to be enslaved, better, that is, *for them*. Natural slaves, evidently, should thus be grateful to

their masters for enslaving them (*Pol.* 1255b3–15, 1254b1924). Nature actually works so as to help us identify the natural slave, by making his body unlike the bodies it prepares for free men. Slaves are bulky and brawny, whereas free men tend to be rather trim and unsuited for heavy lifting, though they do walk upright and have those physical features necessary for civic life (*Pol.* 1254a24–31). There are of course exceptions. Sometimes, tellingly, a natural slave can give birth to a free man, that is, to a man with a fully functioning deliberative faculty. Still, suggests Aristotle, natural slaves do have inferior souls, and this provides ample justification for enslaving them. He even offers a brief argument predicated on the thought that superiority in respect of body might already lend support to the naturalness of subordination. He imagines a race of men born with godlike physiques, of a sort now existing mainly in sculpture, and suggests that such men would naturally look to the weaker as their inferiors and as slaves; but still more is it just, then, for those with superior souls to enslave those with lesser psychological endowments, for the soul is immeasurably more valuable than the body, which it uses for its own ends and purposes (*Pol.* 1254b32–1255a1). Natural slaves, then, are rightly used as living tools, because they are living but separate parts of their masters' bodies, to be used accordingly, for the implementation of their masters' actions (*Pol.* 1254a1–12, 1255b10–11).

On the basis of these sorts of considerations, after considering the question of whether slavery is unjust, Aristotle is prepared to conclude:

> Hence, there is a certain advantage and friendship [*philia*] between master and slave in those cases regarded in terms of nature as worthy of these things, whereas in those cases where matters are not this way, where, rather, slaves have been subjected to force and slavery is based on law, one finds the opposite.
>
> (*Pol.* 1255b12–15)

When master–slave relations are just, because the slave is a slave by nature and is benefited by his association with his master, then everyone is a winner: the master benefits from his tool and the

slave benefits from the directive hegemony provided him by his master. When, however, the slavery is instituted by force of law, or perhaps by custom or convention (*nomos*), and not by nature (*phusis*), then master–slave relations are unjust and marked by enmity.

We should, then, state baldly Aristotle's argument on *behalf of slavery* (**BS**):

1 Slavery is just if and only if there are natural slaves.
2 There are natural slaves.
3 So, slavery is just.

Importantly – and this is yet another reason for facing Aristotle's brief for slavery head on rather than indulging in cultural apologetics – it follows directly from (**BS**-1) that the enslaving of those who are not natural slaves is unjust. As he says, 'No-one would say that someone is a slave if he did not deserve to be one' (*Pol.* 1255a24–25). Consequently, since there are in fact no natural slaves, slavery is, by Aristotle's argument, unjust.

Or are there natural slaves? What can be said on behalf of (**BS**-2)? It is in fact a bit difficult to determine who Aristotle takes the natural slaves to be. We know they lack deliberative faculties (*Pol.* 1253b9–32, 1254a10, 1255b36–37). Happily, they are not Greeks, but are drawn from the inferior barbarian hordes. Perhaps the suggestion should be that as a matter of fact half the Greeks, the male half, all arrive on the face of the earth with sound deliberative faculties, which would preclude their being enslaved. Why mental faculties should be distributed thus unevenly is nowhere explained – or explicable. Or perhaps, in violation of (**BS**-1), it is not a sufficient condition for being justly enslaved that someone be a natural slave. In any event, in addition, there is the suggestion that the natural slave must be non-Greek. That too would need some form of argument, but it is difficult to fathom what it might be. (Note again in this connection that natural slaves can occasionally give birth to offspring with the souls of free men and vice versa; *Pol.* 1254b27–33, 1255b1–2.)

There is, unsurprisingly, still a good deal more instability to be found in Aristotle's views about natural slaves. He suggests that

friendship (*philia*) should and usually will develop between a master and a natural slave. This is odd, since friendship of the best sort requires men of equal virtue, whereas friendships based on mutual advantage tend to be transitory.[27] Further, Aristotle is regularly lauded for freeing his own slaves in his will. Were they or were they not natural slaves? If they were natural slaves, then he did them a disservice by freeing them; yet if they were not natural slaves, then he had been by his own principles unjustified in keeping them. It is difficult to know how he regarded this matter, though he does in general commend those who free their slaves, and does recommend that freedom be held out as a reward to slaves, presumably as a realistic incentive for good service (*Pol.* 1330a31–33, *Oec.* 1344b11–44).

This list of internal tensions and instabilities could be extended *ad nauseam*, though its point is already clear. Aristotle's contention that there are natural slaves justly subordinated for their own benefit is a desperate measure and in some ways simply bewildering. Moreover, it seems plain that Aristotle's defence of slavery is disappointing in a significant, if local, way: if human happiness is objectively given by the demands of human flourishing, which is in turn to be explicated by species-wide *essential* attributes, then all members of the human species are on equal footing with respect to the prospects of virtue and justice. If Aristotle found received forms of oppression congenial, whether of women or of slaves, then he also failed to respect the dictates of his own ethical and political theories.

At the same time, it follows from these considerations that it would be wrong to infer directly that Aristotle's political naturalism fails because of its having morally repugnant consequences. For if it in fact lacks those consequences, and indeed can only serve to undermine them, then Aristotle's political naturalism may yet be defensible precisely because it helps demonstrate what is objectionable in the exploitative relationships it is called upon by Aristotle, indefensibly, to defend. Indeed, as we have seen, the naturalism Aristotle relies upon in this development of the polis appears to be straightforwardly teleological: the polis, he says, is the end (*telos*) of the villages, households, and individuals leading to it (*Pol.* 1252b31). That teleology, however, was rooted in a

conception of human flourishing, such that only in the context of the polis could a being with human capacities find them realized. If human flourishing is our goal, then it is, after all, humans whose flourishing we should cherish.

9.5 CONCLUSIONS

Aristotle's political philosophy is deeply rooted in his ethical, psychological, and metaphysical theories. For this reason, it is wrong to regard him as beginning with a simple presupposition to the effect that humans are endowed with inalienable rights – by their creator or by nature or by any mechanism at all – such that the first task of political theory is to justify the restriction of such rights on behalf of a politically authoritative state. It is not that conceptions of rights or duties are alien to him, but rather that once he thinks he has shown that human flourishing consists in an activity of the soul in accordance with virtue, he takes the first task of political theory to be the assessment of political arrangements in terms of their ability or inability to serve this end. His political naturalism is thus no less teleological than his ethics, psychology, or metaphysics. The purpose of the polis is to make real the ideal of human flourishing, and every political arrangement should be judged relative to this end. Any polis succeeding in attaining this goal, suggests Aristotle, would surely be the polis of our prayers (*Pol.* 1288b21–35).

FURTHER READING (* = ESPECIALLY SUITED TO BEGINNERS, IN TERMS OF CLARITY OR ACCESSIBILITY)

Primary Sources

Aristotle, *Politics*, esp. i 1–6, ii, 1–5, iii 1, 4, 6–12, iv 1, 3, 11, v 1, 8–9, vii 1–3, 8–9, 13–15

Secondary Sources

Keyt, David, *Aristotle: Politics V–VI*, translated with notes (Clarendon Press: 1999)
Keyt, D. and Miller, F. eds, *A Companion to Aristotle's Politics* (Blackwell: 1991)

Kraut, Richard, *Aristotle: Politics VII–VIII*, translated with notes (Clarendon Press: 1997)

*Kraut, Richard, *Aristotle: Political Philosophy* (Oxford University Press: 2002)

*Miller, Fred D., 'Aristotle's Political Theory', *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu/entries/aristotle-politics/)

Miller, Fred D., *Nature, Justice, and Rights in Aristotle's Politics* (Oxford University Press: 1995)

Robinson, Richard, *Aristotle: Politics III–IV*, translated with notes, supplementary material by David Keyt (Clarendon Press: 1995)

Saunders, Trevor J., *Aristotle: Politics I–II*, translated with notes (Clarendon Press: 1995)

Ten

Rhetoric and the Arts

10.1 ARISTOTLE'S ORIENTATION IN RHETORIC AND THE ARTS

Aristotle's counterpart inquiries into politics and ethics reveal his intense interest in the conduct of human affairs: he wants to know what the best life for humans will be so that he may determine and prescribe a means for its realization. These sciences are practical, in the sense that each deals with action, though not with the sort of action normally eventuating in production.[1] His general approach to these practical sciences reflects an easy admixture of the prescriptive and the descriptive: drawing upon his metaphysical and psychological theories of human nature, he describes human flourishing in order to recommend the surest route to its attainment; and he characterizes various forms of political association primarily in an effort to recommend the best, virtue-oriented polis as the optimal political framework.

This same prescriptive–descriptive mélange comes into view in Aristotle's *Rhetoric* and *Poetics*, both works of a practical nature, though now concerned with the sort dedicated to production. In each case, Aristotle describes the field as he finds it – in terms both of the theory and practice of rhetoric and literature – only to proceed to offer recommendations rooted in his descriptive observations. In the case of the *Poetics* especially, Aristotle's tendency to remain aloof from prescriptive/descriptive distinctions has seemed problematic, and has sparked a lively and long-lived controversy. How does Aristotle understand his task in the *Poetics*? Does he, for instance, hope to offer a sort of instruction manual

for budding tragedians? Or does he merely describe the features of tragedy, including the good-making features, with no narrow intent to instruct? Further, if he is aiming primarily at either description or prescription to the exclusion of the other, then his practice of indulging in both seems unwarranted; if, by contrast, he aims at both indifferently, then he may seem in a muddle about his own aims and critical objectives.

Aristotle is not in a muddle. In the *Rhetoric* and *Poetics*, he engages in both prescriptive and descriptive criticism. His doing so is neither surprising nor problematical. Indeed, to those familiar with his practices in ethical and political theory, Aristotle's procedure will seem altogether familiar. His dominant interest in all these areas is equally theoretical and practical: as he sees them, his theoretical inquiries have practical purport. Still, in no case does he understand himself to be offering an instruction manual, or how-to book; rather, in every case, he seeks to describe those practices which best enable a practitioner to realize the objective sought, whether it be human flourishing, the best polis, persuasive discourse, or poetic truth. Because he regards all these activities as end-directed, Aristotle naturally and appropriately proceeds in these disciplines in his customary teleological fashion.[2] To differing degrees, however, the ends of the crafts of rhetoric and tragedy are inherently controversial. Consequently, the most interesting and delicate questions concerning the ultimate worth of the *Rhetoric* and *Poetics* pertain to Aristotle's understanding of the ends of the crafts they characterize. If, looking back through the long development of the dramatic arts, one were to confront Aristotle with the thought that the arts have no function, he would presumably blink in bemused disbelief. Surely if we put on costumes and stand on a stage mouthing words which are not our own while pretending to be someone we are not, we do so with some end in view? Do we not carry on in these ways for some purpose or other? *That* such activities are end-directed seems to Aristotle little in doubt; *what* their ends may be is, by contrast, a live question. Already in antiquity critics, practitioners, and philosophers jostled with one another about the proper function of the arts, as to whether it might be pleasure, or

truth, or moral understanding, or indeed as to whether there should be thought some one function common to all; but any suggestion to the effect that the artistic activity in which we humans habitually engage is simply pointless would have struck all parties to the debate as unmotivated and jejune.

Aristotle's *Poetics* takes a teleological framework for granted first, and most generally, because such a framework grows naturally out of his general four-causal explanatory schema, and second because, more specifically, he thinks of artistic activity as having a distinctive role in human flourishing: artistic activity, whether creative or receptive, is a means to intellectual discovery – and thus contributes to our shared goal of human flourishing.[3]

To a lesser but still very real sense Aristotle's *Rhetoric* presupposes the same framework. Aristotle's interest in rhetoric is in one way general and in another sharply limited. While he is interested in the general features of persuasive speech, Aristotle does not suppose it appropriate to persuade for the sake of persuasion, or even to persuade for the sake of winning. Interestingly, when he approaches rhetoric as a productive craft, Aristotle assumes that persuasion is its goal, but then credits his audience with the intelligence to sort out reasonable sorts of persuasive appeals from the banal, fatuous, and manipulative. Although contemporary advertising experts might regard him as overestimating the intelligence of the general population whose commercial behaviours they hope to sway, Aristotle maintains that rhetoric is most successful when it relies upon genuinely sound arguments (*Rhet.* 1355a5–21). Its craft, like the craft of poetry, thus serves to advance human understanding and flourishing.

10.2 RHETORIC AS A CRAFT

In forensic contexts, persuasion is the goal. Thus, if a lawyer finds herself acting as an adversary for a client she suspects is guilty, she nonetheless strives to secure a verdict of not guilty from the jury. To this end, she no doubt sows seeds of doubt concerning the prosecutor's case; but she may also play upon the jury's sense of pity, seeking to turn their sympathy and human decency towards

her client. Perhaps if the jury identifies with him, and sees him as a poor but decent fellow who has only hoped to feed his hungry children and care for his infirm mother, then they will unconsciously raise the threshold of the bar the prosecutor must cross in order to prove his guilt. She succeeds if they conclude that her client did not steal the bread, or that if he did, his act was born of desperation for his doe-eyed children, and, in any case, the prosecutor failed to *prove* that he stole it, which was supposed to be his job. So, he has no-one to blame but himself if a guilty man walks free. Perhaps the jury's reasoning is convoluted, or even inconsistent; but the defence lawyer's client is free. She, at any rate, has achieved her objective.

Given her ambition, the defence lawyer might do well to study the ways of persuasion. She might, then, among her other pursuits, study rhetoric. Rhetoric, says Aristotle, 'is the power to see, in each case, the possible ways to persuade' (*Rhet.* 1355b26; cf. *Top.* 149b5). He is, however, scornful of those who suppose that rhetoric limits itself to the various forms of *non-argumentative* persuasion, in the form of appeals to ignorance or emotion, shrewd plays upon prejudice or fear, inducements to spite, or other bids to win agreement by non-cognitive means (*Rhet.* 1354a11–26). He censures those among his predecessors who had approached the subject of rhetoric in these ways, on the grounds that they dwelt on the extraneous; he contends that they perverted their craft by recommending means to persuade the members of an audience, primarily in the law courts, by seeking 'to bend the rod before using it as a measure' (*Rhet.* 1354a25–26). The measure here can only be the truth – something, it must be allowed, some disputants would just as soon obscure from view.

Aristotle's predecessors failed to appreciate that rhetoric is a craft (*technê*).[4] In Aristotle's approach, rhetoric is continuous with dialectic (*Rhet.* 1354a1, 1356a30), insofar as it can treat any subject, but is for that same reason not a science (*epistêmê*).[5] In its best incarnation, rhetoric is a craft concerned not with persuasion in the forensic context, but rather in matters of political deliberation: it is thus an extension of dialectic turning towards the political as its special domain, even though it can develop in any

number of directions (*Rhet.* 1356a25). To some extent, rhetoric is subject-neutral, even though it finds its most natural home in these fields of endeavour.

Its subject-neutrality partly serves to distinguish rhetoric, along with dialectic, from science (*epistêmê*), because every science is individuated by a determinate domain with definite starting points. The fact that rhetoric trades in *what persuades* no more stitches together a common domain for it than does, for example, *what intrigues* serve to form the basis of a science. Still, like dialectic, rhetoric can reflect upon the best methods for attaining wanted results. So like dialectic is rhetoric, in fact, that Aristotle regards it a counterpart or outgrowth of dialectic (*Rhet.* 1354a1, 1356a25), even at one point suggesting that it is a part of dialectic (*Rhet.* 1356a30). The points of comparison include that both begin with credible opinions (*endoxa*), though among such opinions, which may owe to the many or the wise, rhetoric tends to restrict itself to the popular as opposed to those which have been ordained by the wise (*Top.* 100a29–35; 104a8–20; *Rhet.* 1356b34).

Aristotle recognizes, of course, that rhetoric can be turned towards any number of ends, fair or foul. In this it is like many other crafts: metallurgists may develop lighter, stronger compounds for bicycles or for bombs. He assumes that a virtuous person will deploy rhetorical tropes towards good ends, and indeed, focuses predominantly – though there seems to be some internal tension on this score in the course of the *Rhetoric* – on that form of rhetoric which persuades by argument rather than by emotional manipulation. In fact, Aristotle makes what may seem an unduly hopeful point, perhaps rooted in an unreflective self-projection, that people regard themselves as genuinely persuaded only when they have been given proofs or proof-like reasons (*Rhet.* 1355a5–21). Looked at from this angle, the most successful rhetorician will be the one who has offered the most compelling arguments. If each of us feels genuinely convinced only when we think we have been given good reason to hold a view, then the rhetorician will seek to divine such reasons in the course of practising the craft.

That allowed, Aristotle's actual practice within the *Rhetoric* seems sometimes at variance with his avowed aim.[6] Even though he

eschews non-argumentative persuasion as extraneous to the craft of rhetoric (*Rhet*. 1354a12–18), Aristotle spends a good deal of energy discussing matters wholly independent of structured argumentation. Thus, for example, he pays attention to matters of speaker self-presentation, as well as to the emotional condition of the audience (*Rhet*. 1358a1–2). The suggestion then lies near that the *Rhetoric* is internally inconsistent, perhaps because it was ineptly pieced together by an editor after Aristotle's death.

It is not necessary to rush to any such conclusion. To begin, when criticizing his predecessors in rhetorical theory, Aristotle does not condemn them for focusing on the emotions, but rather for doing so without *also* discussing the heart of rhetorical persuasion, namely arguments of a suitable sort. So, there is in the first instance an easy retort to the charge of inconsistency, namely that appeals to the emotional disposition of an audience may appropriately augment an otherwise argumentative presentation. Moreover, Aristotle suggests, there will be cases where an audience is so benighted or immature that it will not respond readily to a perfectly cogent argument (*Rhet*. 1404a2–9). Although not every application of this principle is likely to appeal, it may bear reflecting on a case favourable to Aristotle's point, one of warranted paternalism. Parents want their children to develop rational critical faculties, and so reason with them when warning them of dangers they may not immediately recognize. Still, having offered an argumentative explanation as to why drinking the jars of paint kept in the basement is an unhealthy sort of thing, a baby-sitter might well add to a unpersuaded child that a vicious child-eating ogre lurks in the dank beneath the stairs. Thus, to the extent that there is a tension in the *Rhetoric*, it does not devolve into any kind of internal contradiction.

Indeed, Aristotle's dominant contention is that rhetoric proceeds by argumentation of a suitable kind. The kind in question is *enthymemetic*. Those writing on rhetoric before Aristotle had already spoken of beguiling or paradoxical arguments as 'enthymemetic'. Aristotle appropriates their language for his own purposes by treating enthymemes as syllogistic arguments restricted to the sphere of public speaking.[7] As a syllogism, an enthymeme

is a deductive argument; as restricted to the sphere of public speaking, it should be brief, if not pithy, and draw primarily upon widely received credible opinions (*endoxa*) (*Rhet.* 1357a7–18).

In advancing these sorts of recommendations, Aristotle is focusing primarily upon what functions well in a forensic or persuasive context. This explains why a rhetorically savvy speaker will pay attention primarily to commonly accepted *endoxa*. If a speaker finds himself needing to defend the premises he introduces, because they are controversial or alien to his audience, he incurs that much more of a burden by way of persuasion. Such burdens, even if minute, may be cumulative, with the result that an audience will come away sceptical rather than convinced. By contrast, someone already disposed to agree to an argument's premises can be moved that much more easily to its conclusion, which is precisely the proposition the rhetorician wishes his audience to embrace.

Unsurprisingly, Aristotle thinks of rhetoric in broadly teleological terms. Given that the function of rhetoric is persuasion, and because we regard ourselves as convinced when we take ourselves to have been given good reasons, the best rhetoric will issue from a speaker who is sensitive to the character of his audience, but is so by relying on enthymemetic arguments of a kind likely to put on display the competence and virtue of the speaker even as his speech unfolds. The skilled rhetorician thus gains credibility and moves his audience toward the desired end, namely acquiescence in some belief. Presumably, optimal results will be achieved when the belief accepted becomes entrenched in a stable system of mutually supporting beliefs; this form of stability is most likely to occur, suggests Aristotle, when the accepted beliefs arrive with genuine argumentative support rather than by means of meretricious rhetorical chicanery.

10.3 POETIC PRODUCTION

Given the ends of rhetoric, Aristotle naturally devotes a fair bit of attention to the resources of language available to a persuasive speaker. He speaks not only of the argumentative patterns (*topoi*),

but also of figures of speech liable to lend success to a speaker, including the judicious use of metaphor and analogy. His interest in linguistic structure carries over into his *Poetics*, probably the most widely read and interpreted of all of Aristotle's works. It has proven to be a seminal work, minutely assessed and criticized, sometimes by authors well equipped to understand the *Poetics* in its relation to the rest of Aristotle's *oeuvre* but too often also by authors rather less well situated. It has also been alternately adopted and castigated by playwrights throughout history as canonical or as stultifying in its prescriptions for tragedy. The *Poetics* has also, consequently, been subject to fierce interpretive controversy.

Here we will recapitulate the main structure of the work before reviewing two of its central and most hotly disputed notions, imitation or representation (*mimêsis*) and purification or purgation (*katharsis*) – where, in each case, even the correct translation has been a matter of controversy. (I will mainly render *mimêsis* as 'imitation', though it is sometimes also appropriately translated as 'representation'.[8] I leave *katharsis* transliterated rather than translated.[9]) We will close with the issue with which we began, namely the degree to which Aristotle's *Poetics* might be regarded as prescriptive or descriptive; for in reflecting on this question we move closer to an appreciation of such continuing value Aristotle's reflections on tragedy may offer.

We should not suppose, however, that the *Poetics* in any way confines itself to a discussion of tragedy. To begin, the work as we have it is incomplete: Aristotle wrote a second book, on comedy, which has been lost. Although a fair number of snippets from it survive, nothing approaching a full reconstruction from the extant material is possible.[10] As we now possess it, the *Poetics* is exhausted by its first book, which divides into four unequal sections: (i) an introduction to the notion of *mimêsis*, imitation, which divides into several species (*Poetics* i–ii); (ii) a treatment of the development of imitative behaviour, which stresses its natural occurrence in human conduct (*Poetics* iv–v); (iii) a characterization of tragedy, first defining it as a genre and then discussing its various aspects, with a dominant concentration on the features of its plot type (*Poetics* vi–xix); and, finally, (iv) treatment of epic poetry, which

trails off into a loosely connected set of questions concerning critical reactions to tragedy and the comparative worth of tragedy and epic (*Poetics* xxiii–xxvi).

As is clear from this summary, the bulk of the *Poetics* as we have it deals with tragedy. The notion of the craft of poetics, however, is hardly restricted to tragedy, or even to drama, whether tragic or comic. These are types of poetry, which thus needs a generic characterization. Aristotle introduces poetry as a craft, a *technê*, in much the same way he had introduced rhetoric as a craft, that is to say as a structured discipline concerned with production and, unlike science (*epistêmê*), not trading in demonstration (*APo* 100a9; *Met.* 980b25–981a30, 1025b18–28; *EN* 1140b2–34). This helps explain why these treatises are not argumentative, as we may well expect them to be if we are mainly familiar with Aristotle's works in theoretical or practical science. As a craft, poetics differs from rhetoric in that it has as its end *production* rather than persuasion.

As he approaches the craft of poetry, Aristotle begins with the thought that it, along with other arts, is imitative or mimetic. There is, however, a difference. Unlike the other mimetic arts, which include painting and dance, the medium of poetry is language (*Poet.* 1447a19–21). Poetry exploits the features of language – rhythm, pitch, assonance and consonance, and so forth – in the service of imitation (*Poet.* 1447a23–b29).

To what end is poetic imitation to be put? It would be odd, presumes Aristotle, for people to imitate other people merely for the sake of imitation itself. More generally, one might ask, why should human beings imitate other human beings at all, whether or not in the context of drama? Aristotle's initial answer is a bit deflationary: they simply do. That is, it is *natural* to human beings to engage in imitative behaviour, just as it is natural for them to form political associations heading towards a polis.[11] Still, this natural impetus has a deeper explanation. In fact, contends Aristotle, the human proclivity for imitation has its impetus in twin roots:

> In general poetry comes about because of two particular causes, and both of these are natural causes. First, imitating comes naturally to human beings from childhood, and in this point they differ

> from other animals, in that they are the most imitative of all and in that what they first learn they learn through imitation; moreover, they delight in all things produced by imitation. What we actually do is an indication of this. For when we find things painful to see, we nonetheless take delight in viewing the most intricately made images of them, for example the shapes of the most repugnant beasts or corpses. The reason for this is that learning is the most pleasant thing, not only for philosophers but in the same way for everyone else, even if they have little to do with it. For it is because of this that those seeing images take delight in them: as they are viewing them they are also learning and drawing inferences about what each thing is.
>
> (*Poet.* 1448b4–17)

The first source of human imitation is simply this: it is in our nature to imitate. Note, however, that Aristotle does not treat this natural inclination as in any way primitive or inexplicable. On the contrary, he ties it to our impulse to learn, contending that humans more than other animals learn by engaging in mimetic behaviour. This coheres, then, with the second root of *mimêsis*: humans delight in the well-executed imitations, even when we might not like to experience the subject imitated at close range. Thus, we may find *The Death of Marat* fine and impressive, though most of us would avert our eyes from an actual corpse oozing blood in the bath.

What is easily overlooked in Aristotle's easy appeal to nature in the connection of artistic production is that he regards such activity as ingrained in our essence.[12] In this respect, it is instructive to note the degree to which Aristotle's account of the origin of art is intellectualist, and even echoes the opening remarks of his *Metaphysics*. There he makes not only the point that human beings by nature desire to know (*Met.* 980a21), but suggests that we prize sense perception because we delight in the knowledge it affords. His remarks about imitation are in keeping with this suggestion, and both sets of remarks find their justification in his deeply held essentialism. Human beings are knowledge-seeking creatures in their very natures. It is, then, natural for us to engage in any activity serving this end. Aristotle's presumption, then, is

that poetry is primarily a vehicle for discovery. It does not follow that he is in any way narrowly cognitive in his approach or that he fails to appreciate the affective dimensions of the poetic craft. On the contrary, he spends a good deal of time reflecting on matters of meter and verse. Even so, he does look to poetry to serve the cause of human flourishing, which involves an expression of our rational psychic faculties.[13]

10.4 TRAGEDY

Aristotle maintains that kinds of poetry imitate different kinds of subjects in different sorts of ways. Comedy treats baser figures, while tragedy and epic focus on noble characters (*Poet.* 1448a16–18). Epic and tragedy differ in other, subtler ways: tragedy exploits many kinds of verses, while epic constrains itself to one; tragedy, but not epic, makes use of tune in addition to rhythm; and, most significantly, epic is expansive in time, whereas tragedy, as a matter of actual practice and perhaps also ideally, is compressed and unified in its temporal setting (*Poet.* 1449a5–b12).

Building upon all of these theses in common, Aristotle offers the following definition of tragedy:

> Tragedy, then, is an imitation of an action that is serious and complete, and which has some greatness about it. It imitates in words with pleasant accompaniments, each type belonging separately to the different parts of the work. It imitates people performing actions and does not rely on narration. It achieves, through pity and fear, the catharsis of these sorts of feelings.
>
> (*Poet.* 1449b21–29)

As Aristotle proceeds to specify, by 'pleasant accompaniments' he means rhythm, harmony, and song, as we have already seen. Less familiar is the suggestion that each type of accompaniment belongs 'separately to the different parts of the work'. Here Aristotle is simply differentiating tragedy from other forms of choral lyric, like dithyramb, which use song only in certain parts and not others (*Poet.* 1447b27).

The more consequential commitments of the definition are these:

- Tragedy is an imitation of an action that is serious and complete.
- That serious and complete action also has some greatness about it.
- Tragedy achieves catharsis, purification or purgation, either *of* pity and fear, or *by means of* pity and fear – or, perhaps both, of pity and fear by means of pity and fear.

In saying that the imitation of an action is serious and complete, Aristotle has in view the thought that a plot must be well ordered and, optimally, sufficiently complex to encompass both a reversal of fortune (*peripeteia*) and a recognition (*anagnorisis*) on the part of the protagonist. Plots which are unduly simple leave too little room for development, whereas plots which simply string together one event after another chafe against an audience's legitimate expectation of probability and verisimilitude. As Aristotle remarks, fairly enough, 'It makes a great difference whether something happens *because* of something else or merely happens *after* it' (*Poet.* 1052a20–21). Indeed, he emphasizes plot even above character as the first and most critical element of tragedy, 'the soul of tragedy' (*Poet.* 1450a38–39), he says, without which tragedy would be inconceivable.

The remaining two features of Aristotle's definition are catharsis (*katharsis*) and imitation (*mimêsis*), neither of which admits of any easy or undisputed characterization.

10.5 CATHARSIS

Aristotle's account of tragedy appeals crucially to the notion of catharsis – of purgation or purification. Unfortunately, there is nothing approaching a received understanding of Aristotle's meaning; hence there is a need for circumspection in the presentation of this last and most important element in his definition of tragedy. Perhaps it will be easiest to begin with a naïve interpretation (which may be the right interpretation[14]) and then to use it as a basis for a consideration of the main alternatives.[15]

A naïve understanding of Aristotle's appeal to catharsis might be this: 'cartharsis' means purification, and the purification in question pertains to the members of the audience, whose fear and pity are first agitated and then released by means of their empathetic involvement with the plot and characters of the tragedy. Thus, a tragedy first invites, and then agitates, and then releases powerful emotions in the members of the audience; at the resolution of the performance, the audience members leave the theatre emotionally purified, with enhanced appreciation of the human condition, in all its brittle brilliance. This naïve approach finds some support in Aristotle's somewhat idiosyncratic treatment of pity outside of the *Poetics*. He thinks of pity as a feeling properly expressed only towards those who have suffered undeservedly (*Rhet*. 1385b14; cf. *Poet*. 1453a4), so that, for example, we would not feel pity towards someone who, after having been repeatedly warned not to drive after drinking, disregarded such good counsel and drove off the road while drunk with the result that he had his face badly lacerated. The requirement that pity be restricted to those suffering undeservedly in turn intersects with Aristotle's demand for plot coherence: if we witness a character suffering a misfortune for no apparent reason, then we are unlikely to find the plot development at all comprehensible, and so more likely to be bewildered than to feel empathetic pity. It is not that Aristotle supposes that random misfortunes do not befall us; it is just that the caprice of fate does not in his estimation make for good tragedy.

Now, it will be observed that the naïve interpretation of catharsis reflects three decisions regarding his definition of tragedy: (i) the *subject* of the catharsis (the members of the audience); (ii) the *nature* of the catharsis (purification); and (iii) the *matter* of the catharsis (the emotions). Simply by varying along these axes, scholars and dramatists have assembled a bewildering variety of interpretations. Thus, one might in principle treat (i) the subject of the catharsis as (a) the audience members, as in the naïve interpretation; (b) the characters of the tragedy; or (c) the plot elements of the tragedy, that is that the plot itself grows complex, reaches crescendo, and resolves into a simpler state.

Similarly, one might take (ii) the nature of the catharsis as a kind of (a) purification, as in the naïve approach; or (b) purgation, drawing, as many scholars do, on Aristotle's occasional reference to medical models of purification (*Phys.* 194b36; *HA* 572b30; *Prob.* 864a34; *Met.* 1030b1). Finally, in reflecting on (iii) the matter of the catharsis, the options include (a) the emotions, as the naïve interpretation contends; (b) intellectual or cognitive attitudes; (c) undifferentiated human attitudes, whether cognitive or emotive, or some admixture of both; and (d) the tension of plot features. Now, since these axes can be in principle mixed and matched, as well as variously augmented, the possible interpretive permutations are manifold. Consequently, as Ross has aptly observed, 'A whole library has been written on this famous doctrine.'[16] One can only add that in the decades since Ross's observation, the library has required several new wings.[17]

Accordingly, it will be best here merely to highlight some of the considerations relevant to further reflection. First and foremost is the language of Aristotle's claim. He says, literally translated (though here various alternatives may be offered): 'It [namely, tragedy] achieves, through pity and fear, the catharsis of these sorts of feelings [or, these sorts of *things*, where the evident back reference is the feelings of pity and fear].' As noted, the word 'catharsis' itself has various medical and ritualistic connotations. As a medical notion, it means roughly *purgation*, that is the practice of cleansing of impurities and infections in the body by one medical technique or another.[18] More culturally intricate is the second sense, ritual *purification*, performed either retroactively in an effort to make clean someone defiled by the commission of a proscribed act or proactively by way of making someone especially pure for the performance of a sacred duty, as for instance a priest engaging in ablutions before saying mass. Plainly, this second sense of 'cartharsis' carries with it a heavy load of cultural nuance. One might also, however, bear in mind something sometimes overlooked, that the medical and ritualistic notions are in various ways overlapping and continuous.

That said, there is at the limit an important difference between *purging* and *purifying*, not least inasmuch as purgation seeks to rid

the subject of some unwanted stuff, whether infection or blood-guilt, whereas purification seeks only to refine and make unsullied something which may be fundamentally healthy in itself, but out of balance or corrupted by admixture. The difference in emphasis is consequential for our understanding of the goal of catharsis. If we think, for example, with the naïve interpretation that tragedy *purges* emotions of the audience members, then we will likely be presupposing that emotions are bad sorts of things, infections of the soul best excised for psychic health. If, by contrast, still with the naïve, we were thinking that the emotions of the audience required only *purification*, then we might rather be supposing that emotions such as pity and fear are good and healthy features of a well-balanced psyche, so long as they are not exercised inordinately or inappropriately. On this approach, they are basically healthy human emotions, though they may require attention when they are experienced out of proportion or when they are ill-placed – as when, for example, one pities the plight of an obvious confidence man or fears a punctilious letter carrier on the grounds that she might wilfully set about delivering anthrax-laced hate mail. In these cases, the remedy would not be purgation, since pity and fear remain important for human well-being, but purification or refinement, so that an agent can be fully functional and psychologically balanced.

It is not possible to determine on narrow linguistic grounds which of these senses Aristotle might have in view. There is, however, another discussion of catharsis in the corpus where Aristotle does again relate it specifically to tragedy, in *Politics* viii. In that book, which must be studied by all with an interest in catharsis,[19] Aristotle in fact appeals to a variety of different notions, ranging from the purgative to the purifying (see esp. *Pol.* 1341b22–1342b5), suggesting perhaps that the two senses are in fact continuous in his thought. They might well be: if we think of purifying the blood by purging its unhealthy components, then we arrive in the end not with a bloodless body but with a body with healthy blood flowing in its veins. Thus, the appeal to a catharsis of pity and fear in the *Poetics* might in fact embrace both senses. Catharsis would then be, perhaps, *clarification*. The members

of an audience reach emotional clarity by purifying both the cognitive and affective dimensions of their emotional states; and they might do so by purging such states of their unhealthy or illicit components.

Now, this last thought has three further corollaries. First, it is no surprise, but worthy of mention nonetheless, that different critics have arrived at their treatments of catharsis with varying degrees of normative self-awareness. That is, someone antecedently convinced that human emotions are bad things will likely also be disposed to regard their purgation as a worthy object of tragedy. Conversely, someone supposing that pity is to be cultivated as a high moral sentiment might expect Aristotle to find in tragedy its enhancement and refinement. In neither case would the critic have looked first towards Aristotle's own rich and complex treatment of the passions. So, the first corollary is that any adequate treatment of catharsis must proceed against the background of Aristotle's own developed conceptions of the passions, and indeed of his approach to human flourishing more generally. The second corollary derives from the thought that Aristotle may be operating unproblematically with more than one sense of catharsis, drawing on both medical and ritual elements simultaneously. It follows, then, that some elements of the interpretive tradition have been unnecessarily polarized, presuming as they have that since the senses are non-equivalent, Aristotle must have settled exclusively on one or the other. Finally, it follows from all of these considerations that it behoves the careful exegete to understand Aristotle's theory of tragedy within the broader framework of his theory of arts; his theory of education, especially as it is developed in the last book of the *Politics*; his conception of human virtue, especially as it is discussed in the *Nicomachean Ethics*; his distinctive theory of human flourishing, as it appears in both works; and his approach to the affective and cognitive dimension of the emotions, as they are discussed in the ethical and political writings, as well as his *De Anima*. Any adequate account of catharsis will necessarily reflect Aristotle's detailed reflections on the ingredients relevant to its implementation in an artistic framework.

If we accept these corollaries, then we would be well-advised to understand Aristotle's theory of catharsis in linkage with his doctrine of the mean. He thinks that human excellence, or human virtue, lies on a mean between extremes, and that the appropriate expression of a specific virtue reflects sound judgment, appropriately deployed and spontaneously activated by the appropriate circumstances.[20] Catharsis is *not* the end of tragedy, but one means among others for modelling human character. The function of this modelling, in turn, is not some sort of emotional purgation, as if a tragedy is successful just when its spectators leave the theatre depleted and ready for bed. On the contrary, tragedy leads to understanding, and understanding to right action. The success of tragedy resides not in catharsis; rather, catharsis is successful when it serves the ends of tragedy.

10.6 *MIMÊSIS*

This brings us back once again to the genus of tragedy. It is a species of imitation, or *mimêsis*. In reflecting on the origin of our imitative behaviour, Aristotle highlighted two related aetiologies, both broadly intellectualist in character. We learn first, more than any other form of animal, says Aristotle, by means of imitation; but we equally take delight in a well-executed imitation, irrespective of the grossness of the object imitated, because we may learn from such imitations, and learning is, for humans, a delight (*Poet.* 1148b4–24). In speaking this way, Aristotle does not make clear what he understands imitation to be. Already, in fact, the two sources of imitation he cites rely upon distinct and non-equivalent notions of 'imitation': (i) the first is a form of behaviour and (ii) the second is a kind of object. In the first sense, a child learns to speak in part by moving its mouth as he sees his mother move her mouth. This is an unconscious form of activity and not an object at all. In the second sense, a painting is an object intended to represent an object by a highly artificial means, and not an activity at all.

When he speaks of our taking delight in an exactly executed imitation of an already existing item, however repugnant the original may be, Aristotle may appear to be operating with an unduly

limited conception of artistic endeavour. After all, we are now comfortable with the thought that vast numbers of even the plastic arts, like painting and sculpture, are not – and have no interest in being – *copies* of anything at all. Although some musical compositions may represent sounds of nature, many works, whether expressive or not, cannot even remotely be regarded as copies of anything at all. One might conclude directly, then, that Aristotle's presumption that artistic endeavour is mimetic is dated, parochial, and otherwise straitjacketed by his political and didactic preoccupations.

These sorts of criticisms may be justified, if Aristotle adheres to a narrow conception of imitation, whereby all imitation strives merely to copy something already existing. Clearly enough, some aspects of Aristotle's approach to imitation embrace this conception. As we have already seen, he speaks of the imitation of what is in real life repulsive as pleasant when exactly done. This seems a straightforward case of copying. Perhaps, but the bare fact that the unpleasant features are not present in the artistic production already points to there being some selection in the imitation. So, a general question arises: in what does *mimêsis* consist? This question calls forth a prior question as well: what are the *relata* involved in Aristotelian *mimêsis*? Addressing this prior question equips us to approach the general question of concern.

In the case of tragedy, we seem to have one *relatum* before us, namely the tragedy we witness upon the stage (*Poet.* 1459a15–16). If we suppose that is correct, then what is the other *relatum*? Officially, Aristotle's answer is clear and emphatic: 'Since the imitators imitate men acting, these will perforce be excellent or base men' (*Poet.* 1448a1–2; cf. 1450a16). So, we might think that the answer is clear, as it is in the representational plastic arts. A still life of a bowl of cherries is a copy of a bowl of cherries. In the case of tragedy, however, there is most often *in fact* nothing to be copied: Oedipus never crossed the cross-roads. Plainly, however, Aristotle has a broader sense of *mimêsis* in mind than simple copying. For he is happy to speak of what does not exist as being subject to *mimêsis* (*Poet.* 1461b26–32). Moreover, he regards mimetic activity as adhering to norms which might be broken, so

that what does not exist might yet be imitated (*Poet*. 1454a16–1454b17). It seems clear, then, that Aristotelian *mimêsis* is in no way restricted to copying or imitative representation.

For these reasons, it is preferable to think of Aristotelian *mimêsis* as more akin to *representation* or *depiction*, neither of which requires an actually existing entity to be copied or imitated.[21] Of course, having concluded this much is only to invite speculation on the vexed question of the nature of representation. In reference to Aristotle's thoughts on tragedy, only two points merit brief mention. First, in speaking of tragic composition as a form of mimetic activity, Aristotle does commit himself to regarding it as involving a distinctive form of representation. He does not thereby, however, restrict tragedy to an attempted representational realism with respect to actions having in fact transpired. Second, in treating tragic composition as mimetic, however that notion is to be understood in terms of representation, Aristotle nowhere contends that it is sufficient for an activity or object to qualify as a tragedy or a work of art more generally that it be mimetic. On the contrary, he states plainly that there are natural forms of *mimêsis*, including learning activities of many sorts, which are mimetic without belonging to the arts. Thus, it would be wrong to suggest that Aristotle's theory of tragedy is somehow exhausted by its appeal to *mimêsis*. This is but one component, a central component to be sure, of this approach to the genre of tragedy.

10.7 PRESCRIPTIVE OR DESCRIPTIVE?

Aristotle lauds Sophocles many times over in the *Poetics*, highlighting especially the many strengths, as he saw them, of the *Oedipus Rex*, a tragedy he mentions more than any other (*Poet*. 1452a24–26,1453b7, 1454b7–14, 1455a18, 1460a29–30, 1462b2). He can also be critical, faulting, for example, an alleged reliance on external plot contrivances in Euripides' *Medea* (*Poet*. 1461b19–21). The complaint against Euripides is founded in Aristotle's contention that plots must be suitably unified: unexplained chance, however convenient from the standpoint of plot resolution, renders an entire sequence of events disjoint. Aristotle fulminates repeatedly

in the *Poetics* against the introduction of plot contrivances, character improbabilities, and unmotivated offences against sound common judgment. Indeed, he offers a handy summary as a useful starting point for criticism: '[Critics] advance criticisms of five forms: that there is improbability, irrationality, something harmful, contradictory, or at variance with the correctness of the craft' (*Poet.* 1461b22–24). Implicit in each of the forms of criticism is a prescription pertaining to plot, character, or language. It follows, then, that Aristotle's *Poetics* is a prescriptive work.

It follows, that is, if by 'prescriptive work' one means only that the *Poetics* contains elements of prescription. The *Poetics* is not, however, in any sense a manual for aspiring or practising playwrights. It is instead a work whose character is best revealed in comparison first with the *Rhetoric*, the other productive craft described at length by Aristotle, and then with the *Politics* and *Nicomachean Ethics*, both works concerned with practical, though not productive, matters. In all these cases, Aristotle appeals to norms rooted in his metaphysical and psychological theories. In each case, he takes a broadly teleological view, itself rooted in his basic four-causal explanatory scheme,[22] describing a domain relative to its unifying end and then prescribing a course of action for the attainment of this end. From this perspective, the perennial question of whether the *Poetics* is fundamentally prescriptive or descriptive is in one way rather uninteresting: like all of Aristotle's treatments of practical and productive science it is, perforce, both.

That said, there is an interesting question lurking beneath this question. In the *Nicomachean Ethics*, the function of human beings is understood to be an activity of the rational human soul in accordance with virtue; human happiness (*eudaimonia*) is characterized against this backdrop.[23] The goal of political association is not only living, but living well; thus, a political arrangement is good and defensible only to the degree that is serves this end.[24] Moving from the practical to the productive, the goal of *Rhetoric* is persuasion, where Aristotle assumes, justifiably or not, that the most effective forms of persuasion, while attentive to the emotive impacts of rhetorical tropes of various sorts, is at root argumentative. We feel ourselves most persuaded when we regard ourselves as having

been given compelling reasons. Thus, the rhetorical worth of a linguistic production may be assessed against these criteria. In this sense, again, the teleological character of the enterprise renders rhetorical theory at once both descriptive and normative.[25]

What, then, is the goal of tragedy? We have seen already that the goal is not catharsis, however that is to be understood, since this is a means and not an end. What is the point of dressing up like others, regimenting speech into verse, swaying to and fro upon a stage, dancing and pretending to be ancient heroes and gods? Why do spectators assemble themselves to witness production after production? The answer is not blindingly obvious, and surely not so evident, for example, as the goal of rhetoric. What is more, even if mimetic behaviour emerges from an early age in the learning process, the highly artificial activity of tragic production and spectating is not in any way immediately natural, at least not in the direct way that Aristotle contends political association is natural.[26] So, if we are to ascertain the goal of tragedy, we will have to look further afield. Unfortunately, Aristotle is not immediately forthcoming on this subject.

Still, a passage in the *Poetics* reflects his conception of the function of poetry, broadly conceived, and this should be stressed when characterizing and assessing his theory of art. A hint of Aristotle's conception comes into view in his contrast between different forms of writing, poetic and historical:

> The poet and the historian differ not in that one writes in meter and the other not; for one could put the writings of Herodotus into verse and they would be none the less history, with or without meter. The difference resides in this: the one speaks of what has happened, and the other of what might be. Accordingly, poetry is more philosophical and more momentous than history. The poet speaks more of the universal, while the historian speaks of particulars. It is universal that when certain things turn out a certain way someone will in all likelihood or of necessity act or speak in a certain way – which is what the poet, though attaching particular names to the situation, strives for.
>
> (*Poet.* 1451a38–1451b10)

The two striking features of this passage are its contentions that, first the poet strives for universality, and second, that the nobility of the art resides in his doing so. The appeal to universality echoes Aristotle's abiding commitment to the generality of science and scientific explanation.[27] Poetic composition, again broadly construed, puts on display deeply entrenched features of human character and nature. When successful, poetry is a route to comprehension. In tragedy, we learn about ourselves, our position in the world, and our relations to others. The function of tragedy is *not* – and this cannot be overstressed given the endemic contentions to the contrary – catharsis. Nor is it pleasure, or diversion, or titillation, or escape. Rather, the function of tragedy, as a form of imitation, or *mimêsis*, says Aristotle in his characteristically intellectualist fashion, is '*learning*, that is, figuring out what each thing is' (*Poet.* 1448b16–17).

10.8 CONCLUSIONS

Aristotle's treatments of rhetoric and the arts have engendered controversy. Scholars, artists, politicians, and educators have looked to Aristotle for guidance and inspiration, sometimes to good effect and sometimes with ludicrous consequences. It is perhaps unsurprising that such long-lived exegetical controversies have grown up to some degree around the *Rhetoric* but also, and much more markedly, around the *Poetics*. Human beings care about the arts: we imitate, create, spectate, react, review, critique, and spectate over again, often returning for second, third, and fourth viewings of the same work. We produce and study scholarly tomes investigating the influence of Cicero's *Somnium Scipionis* on Dante's *Paradiso*; we learn in university classes about Shakespeare's gender-bending antics, how in his theatre men dressed as women only to portray women pretending to be men; we analyse the chord structure of Messiaen's *Catalogue d'oiseaux*; and we react with unbridled childish delight when shimmering goodness overcomes bloodcurdling evil against overwhelming odds in Hollywood's latest manipulation. It is a fair question: why?

Aristotle's answer is thoroughly and unapologetically teleological.

Like other why-questions, this why-question receives from him a purpose-indicated answer. Ultimately, our engaging in these activities is of a piece with all of our knowledge-seeking behaviour. From this vantage point, artistic activity is continuous with scientific activity. On Aristotle's approach, poetry and the arts are *for* something; and what they are for is not so very different from what our scientific endeavours are, ultimately, in the end, for. Indeed, here they march in step with what we ourselves are for: and we humans, by nature, desire to know. We are, simply said, for knowing. So, finally, engaged in and by the arts because we are humans.

FURTHER READING (* = ESPECIALLY SUITED TO BEGINNERS, IN TERMS OF CLARITY OR ACCESSIBILITY)

Primary Sources

Aristotle, *Poetics*; *Rhetoric*, esp. i 1–6, 13, ii 1, 4, 22

Secondary Sources

Burnyeat, Myles, 'Enthymeme: The Logic of Persuasion', in D. J. Furley and A. Nehamas, eds, *Aristotle's Rhetoric* (Princeton University Press: 1994), pp. 3–55

Halliwell, Stephen, *Aristotle's Poetics* (University of North Carolina Press: 1986)

*Rapp, Christof, 'Aristotle's Rhetoric', *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu/entries/aristotle-rhetoric/)

Rorty, Amelie O., ed., *Essays on Aristotle's Poetics* (Princeton University Press: 1992)

Rorty, Amelie O., ed., *Essays on Aristotle's Rhetoric* (University of California Press: 1996)

Eleven

Aristotle's Legacy

11.1 ARISTOTLE'S LEGACY INTO THE MODERN PERIOD

For the two centuries after his death, Aristotle was largely neglected, certainly uncelebrated, and little known if known at all. The great philosophical schools which came into prominence after his death in the third century BC – Scepticism, Stoicism, and Epicureanism – paid him little mind. Some hypothesize that his works were lost for these two centuries, perhaps, as an ancient story has it, because they were locked away in a trunk awaiting their deliverance to posterity. More likely, though, is that his works, though available, were not widely disseminated, and so naturally had little impact.

Matters began to change dramatically in the first century BC with the editing of Aristotle's works and the advent of the commentary tradition. What little information we have about the earliest beginnings of this period indicates an unexplained upswing in editorial activity in the mid-first century BC in which Aristotle's works were put into order and copied by such otherwise unknown figures as Apellicon of Teos and Tyrannion of Amisus, both, it seems, primarily book collectors rather than philosophers, though each is recorded as having played an important role in the transmission of the texts we now possess.[1] Historically, a great deal of credit for the dissemination of Aristotle's texts has also gone next to Andronicus of Rhodes, who flourished in the late first century BC. He was evidently an Aristotelian philosopher, perhaps active in the remnants of Aristotle's Lyceum,[2] if indeed the school continued in any recog-

nizable form down to that late date. According to the much later report of Porphyry, Andronicus collected Aristotle's works into a single place and put them into orderly divisions.[3] Porphyry's late date, however, renders his testimony suspect, since he was active only centuries later, in the third century AD.

However their early transmission was effected, Aristotle's works undeniably began to excite interest in late antiquity.[4] From the first century BC through the sixth century AD, several of his texts came to form the backbone of a rich commentary tradition. Although alien to us now, the commentary tradition as it existed then was a forum for active philosophizing. Typically, an author would select a work of Aristotle – the *Categories* and *De Anima* were early favourites – and extract a lemma, or a set few lines, for elucidation, criticism, and defence. Although many of the commentaries were initially intended as teaching documents, or as vehicles for like-minded investigators to explore topics of mutual concern, they blurred eventually into independent treatises which used the lemmata as points of departure for philosophical theorizing. One can discern two distinct tendencies within the commentary tradition. Many of the commentators were dedicated Platonists, Neoplatonists as they came to be called in the nineteenth century, while others were more or less committed Aristotelians.[5]

Those in the first strand in this tradition tend to prefigure the conviction of the eminent British philosopher Alfred North Whitehead, who observed that 'The safest general characterization of the European philosophical tradition is that it consists in a series of footnotes to Plato.'[6] Sharing completely in this attitude, many Neoplatonists took it as their mission not only to capture and defend as true the often hidden doctrines of Plato, but also to show how the discordant doctrines of footnote number one, Aristotle, might be made to cohere with the superior output of his master. Much of the story of this Late Antique history of philosophy is only now beginning to be told, and the harmonizing predilections of the Neoplatonists, thought to be so obviously hopeless by many, are being looked at anew.[7]

The other strand in the commentary tradition is more avowedly Aristotelian in its affections. Perhaps the greatest exponent of

Aristotelian philosophy in this tradition is Alexander of Aphrodisias, who was active in the late second and early third centuries AD. Alexander illustrates well how the commentary tradition gave rise to independent philosophy. His own *De Anima* is in fact not a commentary on Aristotle, but an Aristotelian-inspired investigation into perennial themes in philosophy of mind. At the beginning of that work, Alexander is forthright about his motives for studying Aristotle: 'In all philosophical questions, the present writer cherishes a special regard for the authority of Aristotle, in the conviction that his teaching on these matters has greater claim to truth than that of other philosophers' (Alexander, *De anima* 2.5–6). The work proceeds, then, not only to offer perceptive exegesis of Aristotle, but also an independent inquiry into the topics Aristotle investigates in his own *De Anima*, namely, soul–body relations, perception, and thought. Alexander cares for Aristotle not because he is an authority whose words are to be accepted as gospel, but because, in his estimation, Aristotle's views on these topics are true and worthy of elucidation and defence.[8]

From the sixth through the thirteenth centuries, Aristotle's writings were largely lost to the West, though they were carefully and insightfully investigated in the Byzantine Empire during that period. Aristotle became so eminent in the Islamic scholarly world that he came to be known as *Aristotle the Wise*, or simply, *The First Teacher*. In the same vein, in virtue of his eminence as an Aristotelian expositor, the exegete al-Farabi came to be known as *The Second Teacher*. Outside of Byzantium, the best known of these Islamic Aristotelians, and the one who came to garner the most critical attention in the Latin West, was Ibn Rushd (known in the West as Averroes), partly for the interest he excited regarding his accounts of the active mind,[9] which inspired a following in Paris, but which also occasioned harsh condemnation.

Part of the critical reaction to Ibn Rushd came at the hands of the greatest Aristotelian commentator of the Latin West, Thomas Aquinas. During Aquinas' lifetime (1225–74), the works of Aristotle were reintroduced to Western Europe and meticulously translated by William of Moerbeke. Relying on these translations, Aquinas not only offered a series of penetrating commentaries on

Aristotle, but attempted to effect a fusion of Aristotelian philosophy and orthodox Christian theology – an enterprise from the outset alternately condemned as a heterodox confusion and celebrated as a brilliantly successful synthesis.[10] Aquinas, like those in the Islamic tradition who came before him, and upon whose works he relies in his own earliest efforts, came to see Aristotle as an authority of such standing that he needed only be referred to as *The Philosopher* – a practice which became common in the centuries which follow him. The great flowering of philosophy in the thirteenth–fifteenth centuries proceeds, even when it is critical of Aristotelian theses, in a recognizably Aristotelian idiom. In this period, we find philosophers debating, for example, *universal hylomorphism*, that is, the doctrine whether, with the exception of God, *every* entity is composed of form and matter, and the question of the *plurality of substantial forms*, that is, the question of whether substances have but one substantial form or many. In fact, this pair of doctrines became known as the *binarium famosissimum* – the most famous pair. The Aristotelian pedigree of the terms of this debate is plain: each takes as given a central Aristotelian thesis, only to explore its proper extension and most defensible formulation.

One member of this pair, the doctrine of substantial form, also served as a fulcrum to dislodge the pre-eminence of Aristotle in the early modern period. The doctrine of substantial forms was in various ways ridiculed by the English philosopher John Locke, for example, as a metaphysical excrescence incapable of discharging even the tasks for which it was introduced.[11] By contrast, the German mathematician and philosopher Leibniz attempted a decades-long rehabilitation of substantial form, as necessary to explain the unity we observe beyond mere material aggregation. He thus speaks favourably of the doctrine of substantial form, especially in the treatment he found given by Aquinas, but also in its original Aristotelian guise. He accordingly esteems Aristotle as 'more profound, in my view, than many think'.[12] Often enough the views rejected as Aristotelian in the early Modern period are not recognizably as such to anyone with a primary familiarity with Aristotle's texts. In some cases, there is the legitimate explanation that Aristotle's views had been radically transmuted by

some lesser Scholastics, whose codifying tendencies had obscured them beyond all recognition; in other instances, the assessments of Aristotle's detractors cannot be so easily indulgent towards their authors.[13]

Indeed, the entire history of Aristotle from the seventeenth through the twentieth centuries is vexed. As an iconic figure, Aristotle has served a variety of competing interests, from *bête noir* to philosophical saviour. To untangle this history – replete as it is with sundry motives, uneven degrees of philosophical acumen, and varying amounts of intellectual charity – would take us into a new area of inquiry. It is hoped only that the present book has helped open the door to an independent assessment of Aristotle's philosophy for those disposed to undertake the task.

11.2 ARISTOTLE TODAY

Aristotelian studies remain lively, both among those with primarily historical orientations and among those seeking only philosophical engagement. Although virtually every aspect of Aristotle's philosophy discussed in this book is at present being subjected to historical and philosophical reappraisal, there are at least four centres of noteworthy activity: (i) metaphysics; (ii) drama and the arts; (iii) philosophy of mind; and, above all, (iv) ethical theory, in the guise of virtue ethics. In each of these areas, and in many others, Aristotle's approaches have remained inspirational.

To take just the last two of these areas as illustrative, it becomes immediately clear why Aristotle should continue to inspire reflection. His views in philosophy of mind have resonated with contemporary theorists dissatisfied with what they regard as the extremes of reductive materialism and Cartesian dualism. Aristotle's moderate hylomorphism promises to offer a *tertium quid* between these extremes, an approach which embraces the phenomena without attempting to subordinate one set of data to the other. Accordingly, it is unsurprising to find contemporary theorists looking to Aristotle as a kind of philosophical progenitor. One well-known example, one of the founders of contemporary functionalism, is Hilary Putnam, who is happy to take a cue from Aristotle:

> what we are really interested in, as Aristotle saw [*DA* 412a6–b6], is form and not matter. *What is our intellectual form?* is the question, not what the matter is. And whatever our substance may be, soul-stuff, or matter or Swiss cheese, it is not going to place any interesting restriction on the answer to this question.[14]

The point in such an appeal is not, of course, to suggest that we have made no philosophical progress in two millennia since Aristotle. Rather, it behoves us to seek illumination where we can find it, and often enough we can find it in the rich writings of Aristotle. In this instance, inspiration comes from looking towards an explanatory scheme capable of providing the kind of plasticity we seek in formulating our own approaches to the mind most perspicuously.

What is true in philosophy of mind is still more true, and much more pronounced, of contemporary ethical theory. The last decades have seen a resurgence of interest in *virtue ethics* of a recognizably Aristotelian caste. Thus, for example, two leading proponents of this approach justly characterize Aristotle as 'the main source of inspiration for modern virtue ethicists'.[15] The proximate cause of this source is identifiable: when one contemporary philosopher assaulted the dominant ethical theories deriving from Mill and Kant in scathing terms, she did so with the avowed aim of championing the kind of approach to human flourishing advocated in Aristotle's *Nicomachean Ethics*.[16] The result has been the revival of an Aristotelian-style approach to moral theorizing, variously characterized as 'Aristotelian' or 'Neo-Aristotelian' virtue ethics, the latter in deference to the fact that many of the virtues investigated today did not find their way onto Aristotle's own preferred list. Here too, then, one finds Aristotle providing a framework for investigation which has not grown ossified with the ages.

Of course, it would be foolhardy to predict the next directions in Aristotelian scholarship, or of philosophy practised in an Aristotelian vein, or indeed of philosophy of any stripe whatsoever. After all, a half-century ago it would have seemed ludicrous to the practitioners of Logical Positivism that metaphysics would

enjoy the astonishing renaissance it has witnessed in the last few decades. Before the advent of various forms of non-reductive materialism in philosophy of mind, or of virtue theory in ethics, we would have been similarly hard pressed to predict the activity in these fields which have encouraged additional activity in the latest periods of Aristotelian philosophy and philosophical scholarship. Prudence thus dictates that predictions about likely future directions of Aristotle and Aristotelianism be muted or eschewed altogether – beyond, perhaps, saying what seems fitting precisely because it is certain: in one guise or another Aristotelianism will continue to have a future. The perennial interest in his surviving corpus, however challenging and intricate its texts may be, remains an enduring testimony to Aristotle's pre-eminent philosophical legacy.

Glossary

Many of Aristotle's core philosophical terms are inter-defined, or at least explicable with reference to other words in his often technical and distinctive philosophical vocabulary. Cross-references to other glossary entries are given in **bold**. Very often, the truncated definitions given here may mislead if left unaugmented. For this reason, the glossary makes frequent reference to the text, where fuller treatments are given.

accident see **co-incident**.

account, **reason**, **structure**, **argument**, **discourse**, **statement**, **ratio** (***logos***) an important but difficult term in Aristotle's philosophy, *logos* divides roughly into two families of meanings, one broadly semantic and the other not. On the semantic side, a *logos* might be a sentence or a statement, or, when an appropriately connected set of statements, an argument. In the other direction, *logos* is reason, held by Aristotle to be reserved to human beings among the animals. Also on the non-semantic side, a *logos* is the ratio or proportion in a mathematical formula; more broadly, a *logos* is what is captured in a definition of something, where the term is virtually interchangeable with **form**. The two families of meanings are connected: a statement is produced by the rational **faculty** of a being with linguistic abilities and bears the marks of its production. Similarly, a definition, if considered as a linguistic expression, is a kind of *logos*, as what captures the **essence** – the **form** or *logos* – of something. In this sense, *logos* behaves something like *defining* in *defining account* and *defining feature*.

actuality, **activity** (***energeia***, ***entelecheia***) these two terms appear to be Aristotelian neologisms; they are often interchangeable, though in some cases differ slightly in meaning. They are best known by their contrasts: (i) ***energeia*** is regularly contrasted with its correlative **potentiality** (*dunamis*), where it means the actualization of some capacity, e.g. the capacity to see is actualized when one is actually seeing something; (ii) less often, most notably in ethical contexts, *energeia* is contrasted with **change** or **process** (*kinêsis*), in which case it means *activity*, in the sense of being a *complete* activity, i.e. one whose performance does not require the attainment of any result beyond itself. In this sense, e.g. seeing qualifies as an *energeia*, whereas baking is a process.

aition, ***aitia*** see **cause**.

appearances (***phainomena***) from the verb *phainsesthai*, to appear, *phainomena* are simply things which appear. Greek marks a (non-rigid) syntactic distinction between *what appears to be so but is not really so* and *what, being a certain way, also appears that way*. These correspond roughly to the difference in English between 'The Müller-Lyer lines only have the appearance of being different lengths' and 'John F. Kennedy impressed many from the moment of his first appearance on the Washington scene.' Aristotle often begins an inquiry by collecting the appearances – what appears to be the case in that domain of inquiry, without either endorsing or questioning the ultimate veridicality of those appearances. While never slavishly beholden to the appearances, and perfectly willing to overturn them when they are unsustainable, Aristotle does contend that appearances should be preserved when they can shown to be correct. For example, it appears that we engage in deliberation about how we are to act, and it further appears that such deliberations regularly affect the course of future events; we should adhere to this appearance unless we are compelled to give it up. See §1.4 for a discussion of the role of *phainomena* in Aristotle's philosophy. See also **reputable opinions**.

archê see **principle**.

aretê see **virtue**.

be, **exist** (***einai***) Aristotle uses the verb in two ways: (i) predicatively ('Ben is boorish'); (ii) existentially ('There is no Santa Claus'). He sometimes faults his predecessors for failing to distinguish these distinct uses and criticizes their arguments accordingly. See §2.3 for an illustration. He also claims *that being is meant in many ways* where the suggestion appears to be that there is no single sense of being held fixed across all categories of being. On the categories, see §4.4. On the homonymy of being, see §6.4. See also **substance**.

belief (***doxa***) a pro-attitude which, unlike knowledge, may be true or false. In Greek *doxa* is cognate with the verb *dokein*, to seem. See also **reputable opinions**.

capacity see **potentiality**.

category in Aristotle, a basic kind or ultimate classification of beings. See §4.1 for Aristotle's motivations in category theory. See §4.3–4.4 for a discussion of his theory of categories.

catharsis the purification or purgation of pity and fear achieved in tragedy, evidently for the purpose of attaining enhanced understanding of the human condition. Aristotle's appeal to catharsis in the *Poetics* has been the subject of great controversy. For a review of some of the main issues, see §10.5.

cause, **explanation** (***aitia***, ***aition***) a basic explanatory factor, cited in response to questions concerning what is the case and why. There are four kinds of cause: material, formal, efficient, and final; for most domains of inquiry citing all four causes is necessary and sufficient for explanatory adequacy. For a basic introduction to the four causes, see §2.2. For more advanced treatments, see §2.3–2.9. Aristotle regularly connects causation with **knowledge**, since he thinks that we have knowledge of something only when we know its causes.

change, **motion**, **process** (***kinêsis***) a change is the actualization of what is potentially F insofar as it is potentially F. No one English term has exactly the semantic field of *kinêsis*. We tend to reserve the term *motion* for one kind of change, change in location, so that *motion* will often be too restrictive for *kinêsis*. In addition to change in location, Aristotle also recognizes growth, diminution, and simple alteration as kinds of change. Still,

sometimes Aristotle uses *kinêsis* interchangeably with another term, usually restricted to alteration, namely *metabolê*. Then again he sometimes contrasts it with ***energeia*** (activity), where it is best rendered as *process*. See §5.1 for Aristotle's definition of change.

city, **city-state** see ***polis***.

co-incident, **accident** (***sumbebêkos***) when two things co-incide, they overlap – though their overlapping will not constitute a 'coincidence' in our sense of the term. Co-incidents are significant both in Aristotle's theory of **causes** and in his account of **demonstration**. If the Chief Economic Officers is also the best composer in Poland, then it will be true, but misleading because of its being a mere co-incident cause, to say that 'The ineptness of Poland's best composer caused its economy to crumble.' See §2.9 on co-inciding causes. Matters are slightly more complex in the arena of **demonstration**, where two distinct notions come into play, but are not always clearly distinguished. In the first, more technical use, x being *F* co-incides with *x* being *G* when *F* is *x*'s essence and *G* is a non-essential but necessary feature of *x* consequent upon *x*'s being *F* (e.g. if a square is essentially a four-sided closed plane figure, then its having internal angles equalling 360 degrees is a co-incident). In the second, more relaxed sense, a co-incident is simply any intrinsic feature of a thing other than its essence; here it is often rendered as *accident*.

coming to be see **generation**.

common beliefs see **reputable opinions**.

core-dependent homonymy, **focal meaning**, **focal connexion** a type of **homonymy** according to which some range of related definitions depend asymmetrically on a core notion. Aristotle's typical example is *healthy*, across the range of: (i) Socrates is healthy; (ii) Socrates' complexion is healthy; (iii) Socrates' exercise regimen is healthy. The illustration is supposed to make clear first that *healthy* in these applications is not **univocal**, but that the instances are nonetheless related, and related in a distinctive way, since accounts of *healthy* in (ii) and (iii) require reference to the account of (i), but not *vice versa*. If that is accepted, then claims to core-dependent homonymy may be

extended to other, more interesting cases. Of course, appeals to core-dependent homonymy are likely to become controversial when extended to such notions as *justice*, *goodness*, *and being*. See §3.6 for a discussion of core-dependent homonymy and its importance in Aristotle's philosophy. For Aristotle's controversial appeal to the core-dependent homonymy of being, see §6.4. See also **homonymy**.

credible opinions see **reputable opinions**.

deduction (***sullogismon***) 'A deduction is ***logos*** in which, certain things having been supposed, something different from those supposed results of necessity because of their being so' (*APr* 24b18–20). See §3.4 for a presentation of Aristotle's theory of deduction.

demonstration (***apodeixis***) the currency of completed scientific inquiry, a demonstration is a kind of **deduction** featuring premises which are **necessary**, better known than their conclusions and universal in scope. See §3.3 for an explication of these features of demonstration, together with a consideration of Aristotle's reasons for believing that **science** requires demonstration.

dialectic (***dialektikê***) a form of inquiry and argumentation which begins with **reputable opinions** rather than universal and necessary premises (and hence not an instance of **demonstration** and so not used in **science**). Dialectic may be destructive, by showing up faults in an interlocutor's reasoning, or, more problematically, constructive, when it permits a form of argumentative progress which falls short of the rigours of **science**. For an explanation of dialectic and its significance in Aristotle's philosophy, see §3.5.

differentia (***diaphora***) typically rendered in English by its Latin equivalent to mark that it is a technical term, the *differentia* (= difference) is what distinguishes one species under a **genus** from another.

dunamis see **potentiality**.

efficient cause see **cause**.

end, **final cause** (***telos***) see **cause** note that when *end* is used for the final cause, it is in neither its spatial nor its temporal sense (and

so not, that is, the end of the valley or the end of the day). Having come into English via the Latin *finis*, *end* in this application is used purely as an equivalent for the final cause, *telos* in Greek. Closer to its meaning in Aristotle is its use in such expressions as 'It didn't serve his ends to be so truculent.' For a consideration of the character of Aristotle's teleology, see §§2.7 and 2.8.

endoxa see **reputable opinions**.

energeia see **actuality**.

entelecheia see **actuality**.

entrenched opinions see **reputable opinions**.

epistêmê see **science**.

essence (***to einai***, ***ousia***, ***to ti ên einai***, ***hoper***) as this list of Greek terms indicates, Aristotle has no single, set term for essence. Still, he is regularly keen to highlight the defining features of kinds, which he treats as essential. His approach to essentialism is non-modal: the essential features of a kind are not merely those features without which something would not be an instance of that kind, but must also be explanatorily prior to other necessary features of that kind. Thus, if rationality is the essence of human beings, necessarily human beings will be capable of grammar, capable of laughter, and so on; these latter features are jointly explained by rationality, but do not explain it. Each of the latter is an instance of a ***proprium***. For Aristotle's essentialism, see §3.2.

eudaimonia see **happiness**.

excellence see **virtue**.

explanation see **cause**.

faculty see **potentiality**.

final cause see **cause**.

flourishing see **happiness**.

focal connexion see **core-dependent homonymy.**

focal meaning see **core-dependent homonymy**.

form (***eidos***, ***morphê***) in its most general application, a form is simply a positive attribute – what is gained or lost in an instance of **change**, whether accidental or substantial. In its most superficial sense, form is akin to *shape* (as in the form of a

statue); but it typically has a deeper, more metaphysically loaded meaning, such as *character* or *kind*. When a form is substantial, then it is cited in an essence-specifying definition of a kind (as in the form (*eidos*) of humanity). When it is used in the sense of *character* or *kind*, *eidos* can also mean *species* (as in the species (*eidos*) horse). For an introduction to form, see §§2.4 and 2.5. For a discussion of the role of form in definition, see §§3.1 and 3.2. Finally, note that when Aristotle speaks of Platonic **forms**, he sometimes uses the word *eidos* and sometimes uses Plato's more customary term **idea** (*idea*). When speaking of an *idea* in this context, Aristotle does not intend – any more than Plato intended – to indicate something which exists in a mind-dependent way.

formal cause see **cause**.

friendship (***philia***) as a rendering of *philia*, *friendship* does an adequate job, but only when it is borne in mind that Aristotle recognizes three forms of friendship: (i) those based on utility; (ii) those based pleasure; and (iii) those based on goodness, which he regards as perfect or complete friendships. English has rough correlates: (i) 'I have a friend in accounting who can take care of this for us'; (ii) 'He was a fair-weather friend'; and (iii) 'She was always and unfailingly a good friend.' See §8.6 for a discussion of Aristotelian friendship.

function (***ergon***) typically a function is what something is *for*: the function of a computer is to compute, that of a kitchen blender to blend ingredients, and so on. Aristotle applies the notion broadly, beyond artefacts to include the characteristic activity of natural organisms, even though they have not been designed for any purpose. (E.g. the function of an eye is to see, and, more controversially, that of a human being is to engage in rationally structured psychological activity.) On function without design, see §§2.7 and 2.8. On the human function, see §8.3. Aristotle also uses *ergon* to denote the **activity** involved in exercising a function. See also **cause**.

generation, **coming to be** (***genesis***, ***gignesthai***) the word *genesis* (generation) is formed from the verb *gignesthai*, to come to be. Aristotle distinguishes two types of generation or coming to

be: (i) unqualified generation, when a new **substance** comes into existence; and (ii) qualified generation, when something already existing comes to be something or other. (English tends to reserve the word *genesis* for Aristotle's first meaning.) On the two types of coming to be and their attendant puzzles, see §§2.3–2.5.

genus (***genos***) a genus is a kind, normally superordinate to some range of species, which are differentiated from one another by means of some ***differentia***. Thus, human, dogs, and snakes are all species under the genus animal.

good (***agathos***) Aristotle's notion of goodness is at its core functional. Some *x* is a good *F* if *x* performs the **function** (***ergon***) of *F*s well (e.g. a blender is a good blender to the extent that it blends ingredients well). Given that something may have a function without having been designed, Aristotle will speak freely of bodily parts, and indeed of whole organisms, as good insofar as they fulfil their functions (e.g. a good eye sees well, a good human engages well in the essential human activity). See also **function**. On the human good, see §8.1.

happiness, **flourishing** (***eudaimonia***) the objectively given activity which is the best life for human beings. Aristotle denies that happiness is the same thing as pleasure, though he allows that pleasure is a regular concomitant of happiness. See §§8.2–8.3 for an exploration of Aristotle's approach to happiness.

hêdonê see **pleasure**.

homonymous (***homônumon***) two things are homonymous when they share the same name but have different **accounts**. In extreme and easy cases, this will be obvious and uninteresting (e.g. river banks and savings banks). In other, more philosophically interesting cases, homonymy may be more difficult to detect (e.g. good singers and good opportunities). In these cases, its presence may also be disputed. Aristotle often calls attention to the more interesting kind of homonymy when he is assailing a Platonic **univocity** assumption. In constructive contexts, Aristotle repeatedly adverts to the notion of **core-dependent homonymy**. For a treatment of homonymy, see §3.6. For the homonymy of being, see §6.4. Aristotle tends to

use the terms *homonymous* and *meant in many ways* or *spoken of in many ways* (*pollachôs legomenon*) co-extensively.

hylomorphism the thesis that ordinary objects are compounds of **form** and **matter**. For a discussion of Aristotle's introduction of hylomorphism, which is for him a fundamental philosophical term, see §2.4. For further developments in Aristotle's doctrine, see §2.5.

idea see **form**.

induction (***epagôgê***) Aristotle speaks of induction in connection with arguments when there is movement from particular to universal, but also in connection with experience, when we move from some range of particular perceptions to a general concept or precept. On the second sense of induction, see §3.3.

intelligence, **prudential wisdom**, **understanding** (***phronêsis***) sometimes reasonably rendered simply as *intelligence*, *phronêsis* has broad and narrow senses. In its broad application, it covers intelligence generally, so that it is the sort of thing a human has but a rosebush lacks. In its narrow application, it covers the kind of intelligence displayed in practical reasoning, where it is sometimes rendered as *prudential wisdom* or simply *wisdom* (as in, 'She displayed great wisdom in knowing when to quit'). In its more narrow application, *phronêsis* is also contrasted with theoretical wisdom, *sophia*.

kinêsis see **change**.

knowledge (***epistêmê***) see **science**.

logos see **account**.

material cause see **cause**.

matter (***hulê***) the primary subject of change, introduced in conjunction with its regular correlative, **form**. In its simplest use, matter is simply the stuff of which something is made, something which underlies a change, e.g. a quantity of bronze is the matter of a statue. Matter becomes intricately wed to the notion of **potentiality**, as form does to **actuality**. The initial association is easy to fathom, since we may see that a quantity of bronze is potentially many different sorts of artefact, and is actually some artifact only when it is enformed in a certain way. On Aristotle's introduction of matter, see §2.4. On its

further developments, see §2.5. By extending the notion of matter's potentiality as what underlies a change indefinitely, Aristotle seems to arrive at a notion of *prime matter*, a matter which underlies elemental transformation and so which lacks any essential intrinsic trait of its own.

meant in many ways (***pollachôs legomenon***) see **homonymous**.

motion see **change**.

nature (***phusis***) Aristotle uses the term *nature* restrictively, when insisting that something has a nature only if it has an internal source of change, and then more expansively, in speaking of the whole of natural universe. Typically, in the narrower sense, something's nature is its **essence**, e.g. the nature of a human being is to be rational. In the broader sense, Aristotle treats nature as the subject matter of physics. On the division of sciences, see §1.5.

necessary (***anankaion***) Aristotle frequently appeals to necessity, which in its core, unqualified sense is straightforward: *x* is necessary if and only if it is not possible that *x* not be the case. He also distinguishes between unqualified and hypothetical necessity, however. Some *x* is hypothetically necessary if it is necessary *on the hypothesis* of some *y*, e.g. a foundation is necessary on the hypothesis that a house is to be built. Since it is not unqualifiedly necessary that a house is to be built, it is only hypothetically necessary that the foundation is to be built. See also **possibility**.

perception (***aisthêsis***) a subject perceives a sensible object when his sensory faculty is enformed by the sensible form of that object. For a discussion of Aristotle's theory of perception, see §7.6.

phainomena see **appearances**.

phronêsis see **intelligence**.

pleasure (***hêdonê***) the object of appetite, pursued by rational and non-rational animals alike. Aristotle argues that pleasure cannot be the human good, since it is not peculiar to them. See §§8.1 and 8.3.

polis Aristotle's basic political unit, the polis is a self-sufficient community: 'it comes into being for the sake of living, but it remains in existence for the sake of living well' (*Pol.* 1252b29–

30). Because its size is more like a modern city than like a nation or state, while its political autonomy is more like a state than a modern city, one finds *polis* rendered in to English as *city, state, and city-state*. For Aristotle's view of the character and naturalness of the polis, see §9.1–9.2.

Pollachôs legomenon see **homonymous**.

possible Aristotle works with two notions of possibility. The first is: *x* is not impossible – or, what comes to the same, it is not necessary that not *x*. The second is: *x* is neither necessary nor impossible. The first is one-sided possibility and the second two-sided. The difference may be illustrated with the phrase *it is possible that x is hot*. Since it is necessary that fire is hot, if we say that it is possible that fire is hot, we have one-sided possibility in view. By contrast, since water may be either hot or not, when we say that it is possible that water is hot, we have two-sided possibility in view. For Aristotle's view of possibility, see §3.4.

potentiality, **capacity**, **faculty** (***dunamis***) closely associated with its regular correlate **actuality** (*energeia*), potentiality is a core concept for Aristotle. Something has a potentiality for becoming F or doing F-ish things when it has an internal **principle** for being or doing F. Thus, some wood is potentially a house, while water vapour is not, and an eye has the capacity to see, while the sole of a leather shoe does not. These illustrations show how Aristotle regards potentiality as more restrictive than bare possibility. Perhaps it is in some sense possible that trees may speak, as they do in the *Wizard of Oz*; but in fact trees lack that capacity. In this connection, it is also natural to render *dunamis* as *faculty*. Aristotle regards **matter** as potential and treats the two concepts as intimately connected. See §2.6 for a discussion of Aristotle's conception of potentiality as it relates to matter and the **material cause**. For the faculties of the soul, see §7.6.

prime matter see **matter**.

principle, **source**, **origin**, **beginning**, **rule** (***archê***) as this long list indicates, *archê* is an important and malleable word for Aristotle. In many contexts, Aristotle's treats the *archê* of something as its fundamental feature, as that in terms of which its other features

are explained. This is why he treats his predecessors as having nominated an *archê* when they suggest, e.g., that everything is made of water. He likewise treats his own four **causes** as principles, suggesting that only in the terms given by them may we arrive at complete explanations. The verb *archein* also means *to rule*, so that the ruling power is called an *archê*. The connection across all these uses is that an *archê* is something *primary*.

process see **change**.

proprium (***idion***) although it has non-technical uses, where it means *distinctive* or *private*, *idion* is also a technical term for Aristotle, referring to non-essential but necessary properties of something. Thus, for example, it is *idion* of human beings to be capable of grammar. In this sense, it is customary to mark its technical feature by reserving for it the Latin equivalent *proprium*. See §3.2 for a discussion of the *proprium* in Aristotle's theory of **essence**. Somewhere between its technical and non-technical uses, Aristotle uses *idion* to refer to the proper objects of sense in his theory of perception, in terms of which sensory **faculties** are individuated. For this sense, see §7.6.

prudential wisdom see **intelligence**.

psuchê see **soul**.

reputable opinions, **credible opinions**, **entrenched beliefs**, **common beliefs** (***endoxa***) '*Endoxa* are those opinions accepted by everyone, or by the majority, or by the wise – and among the wise, by all or most of them, or by those who are the most notable and having the highest reputation' (*Top.* i 1, 100b21–23). Aristotle collects *endoxa* at the start of a **dialectical** inquiry, running through them both to bring a problem into focus and consider what progress may have already been made with respect to the issue under consideration. On Aristotle's use of *endoxa*, see §1.4. On dialectic, see §3.5. The word *endoxon* is related to the verb *dokein*, to seem. When Aristotle records the *endoxa*, he is recounting how things have seemed, without taking a stance on whether what seems to be the case is or is not the case. See also **appearance**.

science (***epistêmê***) the word *science* comes into English from *scientia*, the Latin equivalent of *epistêmê*. In Aristotle *epistêmê* has two

central uses: (i) an organized body of knowledge, presenting the completed results of inquiry, expressed using **demonstration**; (ii) the state of knowledge in which someone knowing such a science has achieved. Note that the first use is broader in Aristotle than is *science* in the contemporary English where *science* is often equivalent to *natural science*; in Aristotle, science comprises any properly articulated body of knowledge – more in keeping with the English use which recognizes also the mathematical, social, and moral sciences. For Aristotle's division of the sciences, see §1.5. For the main components of Aristotelian science, see §3.3.

soul (***psuchê***) the soul is the **form** and **actuality** of an organized body, which is the **matter** of the soul. Aristotle regards it as uncontroversial that animals have souls, because to have a soul is in his terms simply to be animate, or living (*psuchê* = *anima* in Latin). For the same reason, he regards plants as ensouled. The soul is thus a source or **principle** (***archê***) of all life. If we make the easy judgment that all living things have a soul, then the interesting philosophical question, as Aristotle sees it, pertains to the **nature** of this soul that all living things have. For Aristotle's preferred account of the soul, see §§7.1–7.4. For a problem regarding Aristotle's account, see §7.5.

spoken of in many ways (***pollachôs legomenon***) see **homonymous**.

substance (***ousia***) Aristotle's preferred way of referring to substances, or basic beings, is *ousia*, an abstract noun formed off of the feminine participle *ousa* of the verb *einai*, to be. Thus, one might as readily speak of this connection of *beings* rather than *substances*. For this reason, although *ousia* is traditionally translated as *substance*, this is a very misleading rendering if it is taken to indicate, as it sometimes does in English usage, some *stuff* or *quantity*, because neither of these qualifies as a substance in Aristotle's technical sense. Rather, a substance is a basic being, capable of existing in its own right. In the early ontology of Aristotle's *Categories*, primary substances are individuals, e.g. Socrates, and secondary substances appear to be universals corresponding to the species over these individuals, e.g. human being. On Aristotle's early theory of substance, see §4.6.

Aristotle's introduction of **hylomorphism** threatens this early theory, since Socrates turns out not to be a metaphysical simple, but rather a compound of **form** and **matter**, each of which has a claim to being *ousia*. On the relevance hylomorphism to the ontology of the *Categories*, see §6.3. On the difficulties surrounding Aristotle's mature theory of substance, see §6.6.

syllogism see **deduction**.

teleology see **end**.

understanding see **intelligence**.

univocity a single, non-disjunctive, essence-specifying definition. Aristotle assails Plato for his tendency to assume univocity. In these contexts, Aristotle often prefers **core-dependent homonymy**. See §3.6 for a discussion of univocity and homonymy.

virtue, **excellence** (***aretê***) sometimes rendered as *excellence* rather than *virtue* to capture the breadth of Aristotle's term, which: is occasionally but not often present also in English. We tend to think of *virtue* in terms of moral virtue exclusively, though we are also prepared to speak of someone's particular professional virtue, where no moral appraisal is intended, e.g. 'One of her outstanding virtues as an emergency doctor was her swift and sure diagnostic technique.' Aristotle's notion is in keeping with the broader conception of virtue, but centrally includes the narrow notion as well. Because something attains virtue if it is **good**, and goodness is closely related to **function**, an *F* is virtuous when it fulfils the function of *F*s well (e.g. an excellent knife is one which cuts well). In the case of human beings, who equally admit of a functional characterization, the virtues are choiceworthy states of character and intellect. Accordingly, for Aristotle, the question of why an individual might want to be virtuous has something of the flavour of asking why that individual might want to be excellent. On Aristotle's function argument, see §8.3. On the virtues of character, see §8.4.

Notes

ONE LIFE AND WORKS

1 The ancient sources concerning Aristotle's life have been collected for convenience by Düring (1957). The earliest extant overtly biographical material owes to Dionysius of Halicarnassus, who lived at Rome fully three centuries after Aristotle's death. Diogenes Laertius, writing yet a further three centuries on, provides a much fuller account. His various reports are of mixed value, but they evidently do draw upon significantly earlier sources, extending back to Hermippus, who wrote in the same century as Aristotle's death and was probably a member of his school. Diogenes also reproduces Aristotle's will, a document which brings us into a rare contact with Aristotle's personal side. (On the character of Aristotle's surviving writings, see §1.4 below.) Later lives are of Neoplatonic or Byzantine pedigree, including the *Vita Marciana*, the *Vulgata*, and the *Latina*. A still useful overview and assessment of the biographical traditions surrounding Aristotle is Grote (1880, 1–26).

2 The sharp division in assessment of Aristotle appears to extend back all the way to his contemporaries. A chronicler of Athenian life working in Athens only two decades after Aristotle's death, Philochorus the Atthidographer, already reflects this division (Düring 1957, 463).

3 Themistius (*Orationes* 285c5) speaks of an entire army (*straton holon*) of detractors arrayed against Aristotle already in his own lifetime.

4 Diogenes Laertius V 2.

5 Ross (1949, 208).

6 Collected in Düring (1957, especially §III).

7 (Frag. 650 R^3, Frag. 673 R^3, Olympiadorus, *Commentarius in Gorgiam* 41.9).

8 See §8.6 for a discussion of Aristotle on friendship.

9 See §3.2 and §6.1 for developments of this contention.

10 Still less do we know his appearance, although some busts of him may be copies of originals. Diogenes Laertius, writing some five centuries after Aristotle's death, relying on sources which were themselves already derivative, reports: 'He had a lisping voice, as is asserted by Timotheus the Athenian, in his work on *Lives*. He had also very thin legs, they say, and small

eyes; but he used to indulge in very conspicuous dress, and rings, and used to dress his hair carefully' (*Vit. Phil.* V. 2).

11 Diogenes V 6 attributes to an otherwise unknown author Eumêlus an account of Aristotle's early life according to which he lived opulently in his early twenties; squandered his inheritance; took up military service; resigned from service and returned to Stagira; set up a surgery in the medical building left him by his father; quit this profession; turned to rhetoric and philosophy; and finally migrated to Athens at the age of thirty-two.

12 Strabo, *Geography* xiii.1.57.

13 Strabo, *Geography* xiii 610; Diodor. xvi 52.

14 Pliny the Elder, *Natural Histories* (VIII. 18):

> Alexander the Great, being inflamed with a strong desire to become acquainted with the natures of animals, entrusted the prosecution of this design to Aristotle, a man who held the highest rank in every branch of learning; for which purpose he placed under his command some thousands of men in every region of Asia and Greece, and comprising all those who followed the business of hunting, fowling, or fishing, or who had the care of parks, herds of cattle, the breeding of bees, fish-ponds, and aviaries, in order that no creature that was known to exist might escape his notice. By means of the information which he obtained from these persons, he was enabled to compose some fifty volumes, which are deservedly esteemed, on the subject of animals; of these I purpose to give an epitome, together with other facts with which Aristotle was unacquainted.

15 Thus, for example, he describes the feeding habits of eels in part by drawing upon precise descriptions of eel breeders (*Hist. An.* viii 2, 592a1–27).

16 We do not, however, know the precise meaning of the epithet 'Lykeios' as it applies to Apollo, since there is a dispute about its provenance. In any event, whatever resonances the name may have had were lost as the name 'the Lyceum' came to be applied to Aristotle's school generally.

17 Strabo, *Geography* xiii.1.54.

18 Diogenes Laertius, *Vita Phil.* IV. 11.

19 For a discussion of Aristotle political theory, see Chapter Nine below.

20 In 335 Alexander had repressed a revolt by the Thebans and had permitted his minions to destroy nearly the entire city in an unremittingly vicious manner. As Grote (1899, vol. 12, 41) observes, ' . . . Thebes was effaced from the earth'. Thereafter, Alexander demanded that Athens, which had sympathized with Thebes, surrender its anti-Macedonian politicians. He was evidently prepared to enforce his wishes with the same ruthlessness he had demonstrated in Thebes, but was eventually mollified, and allowed Athens to signify its fealty by the exile of two of its citizens, Ephialtes and Charidemus.

The hostile and antagonistic sentiment directed against Alexander in Athens was widespread and deeply felt.

21 Diogenes Laertius V 5; Athenaeus xv 696.

22 Düring (1957, 340–42). Though oft repeated, the story is likely apocryphal.

23 Barnes (1997) takes a cold look at the evidence and finds much of our received understanding of the transmission of Aristotle's works unsubstantiated to the point of being fanciful.

24 Bekker numbers thus provide a common form of citation used by scholars and students alike. Thus, for example, '*Metaphysics* i 1 981a17–19' refers to the first chapter of the first book of Aristotle's *Metaphysics*, p. 981, column A, lines 17–19 in Bekker's edition. (Each page had two columns of Greek text.) In practical terms, to find a passage cited in this or any other work, a student need only open any good translation of the *Metaphysics* and scan along the Bekker pagination, given in the margins along the side of the text, until reaching the appropriate passage. The *Constitution of Athens* lacks Bekker numbers, because it was discovered only in 1890.

25 See §3.4 for a discussion of Aristotle's logic.

26 Cicero, *Ac. Pr.* 38.119, cf. *Top.* 1.3, *De or.* 1.2.49.

27 A catalogue of Aristotle's writings compiled by an ancient bibliographer, Diogenes Laertius (V 233–27) runs to over 150 items, prefaced by the remark that Aristotle 'wrote a large number of books which I have thought it appropriate to list because of the man's excellence in every field'. The list contains titles in a staggering number of areas. A small sample of these titles suggests the multi-faceted character of Aristotle's inquiries: *On Justice*, *On the Poets*, *On the Soul*, *On the Sciences*, *On Species and Genus*, *The Art of Rhetoric*, *Lectures on Political Theory*, *On Animals*, *On Plants*, *Dissections*, *On Mythological Animals*, *Optics*, *Theses on Love*, *Against Zeno*, and *Poems*. There are in addition treatises in logic, language, the arts, ethics, psychology and physiology, and, of course, metaphysics and the theory of knowledge. Notably, the list does not contain many of the works which have come down to us today. Often, however, it is unclear whether a title refers to a given treatise we possess, since titles of ancient works were often appended by later editors, rather than by the author himself.

28 On Aristotle's treatment of *akrasia*, see §8.5.

29 On dialectic, see §3.5.

30 To help ameliorate this unhappy situation, the present volume contains a discursive glossary, intended to serve as reference tool for those encountering Aristotle's works for the first time.

31 Strawson (1992, vii)

32 *The Revised Oxford Translation* vol. 1, 5–7, contains a useful list indicating which are spurious, which genuine, and which in doubt. It contains 47 titles, of which 13 are spurious, and another three are doubtful. The same work (vol. 2, 2384–463) does an excellent job of reproducing representative

fragments, including the dialogues. It also provides Aristotle's will, from Diogenes Laertius V 11–16 (vol. 2, 2464–65).

33 This is a point made by the great nineteenth-century Aristotelian Jaeger, who did pioneering work on the question of Aristotle's development. (See Jaeger 1934, 46 n. 3.) Surprisingly, and indefensibly, Jaeger regards the *Categories* as written by someone other than Aristotle. Jaeger's work first appeared in German in 1923 and was translated into English in 1934. Although many points advanced by Jaeger, both large and small, are now disputed or rejected, there is still much to learn from careful study of his monumental achievement.

34 On the origin of the word 'metaphysics', see §6.2.

35 On the character of Aristotle's physics, see §5.1.

36 The fundamentals of Aristotle's logic are recounted in §3.4.

37 Aristotle's four-causal explanatory schema is almost completely absent from the *Organon* – with the striking exception of an extremely difficult discussion of some version of this schema in *Posterior Analytics* ii 11. Opinions vary as to the appropriate explanation for this lack, ranging from developmental hypotheses to the effect that Aristotle had not yet developed this schema at the time of the composition of the *Organon* to deflationary suggestions to the effect that the schema is not in evidence simply because it is not relevant to Aristotle's concerns in these works. For an illustration of how one facet of this debate plays out, see §4.5. For a detailed defence of the claim that Aristotle's hylomorphism is developmentally posterior to the *Organon*, see Graham (1987).

TWO EXPLAINING NATURE AND THE NATURE OF EXPLANATION

1 On Aristotle's method of collecting the phenomena and recounting the *endoxa*, see §1.4.

2 See §1.2 on Aristotle's assessment of human nature.

3 Many centuries after Aristotle remarked upon the natural curiosity and inquisitiveness of the human race, Kant famously assailed the inescapable propensity of the human mind to advance questions beyond its own grasp:

> Human reason, without being moved merely by the idle desire for extent and variety of knowledge, proceeds impetuously, driven on by an inward need, to questions such as cannot be answered by any empirical employment of reason, or by principles thence derived. Thus in all men, as soon as their reason has become ripe for speculation, there has always existed and will always continue to exist some kind of metaphysics.
>
> (*Critique of Pure Reason* B21)

Unfortunately, according to Kant:

> Reason must be checked insofar as it casts us permanently forward into an illusion of grasping objects beyond the bounds of sense (viz. the soul, the world as a totality, and God). The illusion remains, even when it is revealed as illusion, even as the moon appears larger when it is near the horizon despite our knowing that it is not.
>
> (*Critique of Pure Reason* A297–98/B354–55)

Aristotle seems constitutionally opposed to Kant's pessimism about the prospects of reason: he is confident that explanations are available and gives every indication that he thinks he is up to the task of providing them.

4 On essence and accident, see §3.2.

5 The notions of explanation distinguished should not be thought to exhaust the field of alternatives. There are many gradations between the two extreme views presented. For an exceptionally clear and useful introduction to some issues surrounding the connection – or lack thereof – between explanation and causation, see Psillos (2002).

6 Scholars debate about whether we should speak of four *kinds* of causes, or four modes of causes, or indeed whether the four causes are really causes at all, whether they may be, for instance, *grounds*, or linguistic *explanations*, or *becauses* rather than causes. Most of these debates are conditioned by a conception of what we mean by 'cause' – when in fact *we* cannot agree about what we mean by causation. For a useful overview of some of the various contemporary approaches, see Beebee *et al.* (2007). On contemporary approaches to the relation between causation and explanation, see Psillos (2002). For discussion of the status of the four causes, or *aitiai*, in Aristotle, see Charlton (1970), Moravscik (1974, 1975), Fine (1984), Irwin (1988), Freeland (1991), Lewis (1991).

7 As we shall see, not every state of affairs need have all four causes. For example, a co-incidence does not have a final cause – or else it would not be a co-incidence. Similarly, mathematical objects are abstractions from matter and thus do not have material causes (though, even here, Aristotle is sometimes inclined to introduce a kind of matter for them, 'thought matter' (noetic matter). In the current discussion, we will ignore these complications by confining ourself to the base case. For co-incidences, see *Phys.* 196b10–197a13. For mathematical entities, see *Phys.* 190b25, 193b22–194b16; *Met.* 1036a9–12, 1076a8–1078b5. For other entities without matter, see *Met.* 1037a10–16, 1042a31.

8 It is a common complaint of his against the earlier natural philosophers that they cited only the material cause, and thus failed to provide adequate explanations of nature (*Phys.* 188b29–36, *PA* 642a19–31; *GA* 789b2–5; *Met.* 983b 7–984a16, 986b31).

9 *Treatise of Human Nature* (I. iii. 15).

10 Hume's regularity theory of causation set the stage for much of the contemporary discussion. Although there has been a lively scholarly controversy regarding his final and most mature thoughts on the topic, in his *Treatise of Human Nature* (I. iii. 14) he says: 'We may define a CAUSE to be an object precedent and contiguous to another, and where all the objects resembling the former are plac'd in like relations of precedency and contiguity to those objects, that resemble the latter.' In his later *Enquiry Concerning Human Understanding* (VII), he says 'we may define a cause to be an object followed by another, and where all the objects similar to the first, are followed by objects similar to the second'. He then adds, non-equivalently, 'Or in other words, *where, if the fist object had not been, the second never had existed.*'
11 *Treatise of Human Nature* (I. iii. 15).
12 These considerations are explored more fully in §2.6.
13 See Shields (2001) for a fuller introductory treatment of Parmenides. For a more detailed but still accessible investigation, see Barnes (1979, 155–99).
14 This claim derives from Parmenides DK28B8.
15 *Metaphysics* 995a27.
16 In fact, Aristotle's various words for change lack exact parallels in English. His primary word, *kinêsis*, is often better rendered as 'motion', though in fact he distinguishes 'motion in place' (*kinêsis kata topon*), from other sorts of change, including growth and diminution, which he also regards as species of *kinêsis*. (For a brief discussion of this matter, see the entry on *change* in the Glossary.)
17 *Hamlet* iii 1 64–9.
18 In this book, definitions of key philosophical notions are given in this format '$x =_{df}$', which may be read as 'x is to be defined as . . . '. The notion of definition invoked in this formula is understood to be the essence-specifying definition, that is the definition which captures and states the essence of the notion being defined.
19 For an example outside of philosophy, consider the interdefining of a particle having a *positive* or *negative* charge given in terms of mutual attraction or repulsion.
20 This notion is explored in §5.5.
21 He has in mind discussions of these notions in *Met.* v 7 and ix.
22 The word *ousia* is an abstract noun formed from the participle being (*ousa*), of the verb to be (*einai*). It is variously translated, ranging from 'reality' to 'being' to 'substance'. In this book, I follow the dominant practice of rendering it as 'substance', but caution that this should not be taken as it sometimes is in English as roughly equivalent to 'stuff'. Rather, it is closer to what we mean when we speak of 'the substance of her proposal', i.e. as what is essential or fundamental. Even that, though, can be in various ways misleading. It is better simply to accept it as a quasi-technical term, like other technical terms, to be understood by the (rather complicated) role it plays in Aristotle's theory of change.

23 Aristotle's theory of substance is considered in §§4.6 and 6.6.
24 See §§4.5 and 6.6 for more on substance.
25 See §3.2 for a discussion of Aristotle's distinction between essence and accident.
26 See Shields (1999, 268–70) for a brief overview of some of these alternatives, together with references to their various proponents.
27 In this connexion, *intensions* are to be regarded as descriptions or defining properties, where as *extensions* are the objects or events falling under those descriptions or properties. Thus, the expressions 'Commander-in-Chief of the Armed Forces' and 'President of the United States' are intensionally distinct but extensionally equivalent, since they differ in meaning but pick out the same entity. In the context of causation, one question that has exercised contemporary writers concerns whether, e.g., since Socrates' drinking hemlock caused his death, and he drank his hemlock at dusk, we are licensed to infer that Socrates' drinking hemlock at dusk caused his death. If we take the events of Socrates' drinking hemlock at dusk to be the same event as his drinking hemlock, then if we also think that his drinking hemlock *at dusk* did not cause his death, we believe that causal contexts are non-extensional. Analogous sorts of questions show up in Aristotle's treatment of accidental or co-incidental (*kata sumbebêkos*) causes. He allows, for instance, that we can say that the sculpture was caused to come into being by the activity of a musician – when the musician is also a sculpture and then only co-incidentally or accidentally (*Phys.* 195a32-b6, 196b25, 197a13, 198a9, 257a30).
28 See §2.7 for a consideration of these matters.
29 Aristotle provides this sort of argument against Parmenides at *Physics* 254a23–31.
30 This view is clearly recounted and criticized by Bedau (1992, 781): 'Contemporary analyses of teleological explanation generally attempt to "sanitize" it, usually by trying to assimilate it to some uncontroversial descriptive form of explanation.'
31 On the final cause of human beings, see §8.1.
32 In speaking of one feature of an entity's being *epiphenomenal* upon another, philosophers have in view features which are secondary, caused by primary features, and causally inert or at least irrelevant to the causal work of the primary features. If a steam engine gives off a billowy cloud of vapour, its *being billowy* is epiphenomenal and does nothing to propel the engine forward.
33 Skinner (1971, 6).
34 Johnson (2005, 2–3) catalogues some of the remarkable criticisms lodged against Aristotelian teleology:

> Aristotle is often characterized as a naïve or uncritical teleologist. Detractors reject his supposed panglossianism, mysterious entelechies, magical pneuma, obscure natures, hidden essences, backwards causation, animism, and anthropomorphism. Even supporters have sometimes

> understood his teleology to necessitate such undesirable doctrines as vitalism, creationism, and anthropomorphism.

Johnson's study provides an accessible corrective to some of these perversions.

35 Bacon, *Advancement of Learning* iii 4, 431.

36 Newton, *Philosophiae Naturalis Principia Mathematica* iii.

37 Instructively, Searle (2002), who is harsh on the prospects for final causation outside the realm of the mental, is equally adamant that no science of mind which ignores the normativity of the teleological has any prospect whatsoever of succeeding. Thus, he contends, 'There is nothing normative or teleological about Darwinian evolution. Indeed, Darwin's major contribution was precisely to remove purpose and teleology from evolution, and substitute for it purely natural forms of selection. Darwin's account shows that the apparent teleology of biological processes is an illusion' (51). On this basis, he infers first that no attempt to locate mental normativity in evolution will succeed, and then second, more generally, that any attempt to naturalize intentional content is doomed to failure:

> Any attempt to reduce intentional to something nonmental will always fail because it leaves out intentionality. . . . A symptom that something is radically wrong with the project is that the intentional notions are inherently normative. They set standards of truth, rationality, consistency, etc. and there is no way that these standards can be intrinsic to a system consisting entirely of brute, blind, nonintentional causal relations. There is no normative component to billiard ball causation.
>
> (51)

38 So, e.g., Searle (2002), as quoted in n. 37.

39 Zeller (1931, §48).

40 See §2.7 for a discussion (**ATC**) Aristotle's primary argument for teleological causation.

41 See below §3.1 and §7.1–§7.3 on life and essence in Aristotle.

42 This contention is developed in §2.7.

43 See §2.5 for Aristotle's distinction between substantial and accidental forms.

44 For more on homonymy, see §3.6.

45 Aquinas, *In Phys.* ii 186; *De principiis naturae* iv 25.

46 See §§2.7 and 2.8 for Aristotle's arguments in this direction.

THREE THINKING: SCIENTIFICALLY, LOGICALLY, PHILOSOPHICALLY

1 Aristotle also recognizes a weaker form of definition, something akin to a lexical definition, at *APo.* 93b19–30.

2 Attacks on essentialism come from many quarters, some forceful, others unimpressive. For an influential attack on essentialism in contemporary philosophy see Quine (1960, 199). Quine's attack is crisply refuted by Plantinga (1974, 23–6).
3 See §2.5 for an explication and defence of this distinction.
4 See §1.4 for some remarks on Aristotle's tendency to rely upon technical and quasi-technical jargon.
5 The past tense in this formula is sometimes perplexing to Aristotle's Greekless readers. It represents the so-called 'philosophic imperfect', where the imperfect is the tense of continuing action in the past, while the 'philosophic' imperfect indicates what something was *all along* – what something was fundamentally or essentially. Perhaps an analogue in English is the past tense found in such locutions as 'He was always arrogant', said of someone still living and still arrogant.
6 Aristotle also uses the term *idion* (or *proprium*, in its usual Latin equivalent) in a more relaxed manner, so that it means simply *essential property* or rather *non-essential but necessary property* (*APo* 73a7, 76a17g; *Met.* 1004b11; *EN* 1097b34). The context generally suffices to make clear which use he intends.
7 On objective versus subjective explanation, see §2.2.
8 On Aristotle's division of the sciences, see §1.5.
9 See the Glossary entry on *epistêmê* for more on this distinction.
10 Necessity is said to be *de dicto* when the necessity in question ranges over the entire proposition (the *dictum*) (e.g. necessarily, if Walter is pedalling a bicycle, then he has legs). Necessity is said to be *de re* when it attaches to the thing (the *res*) (e.g. Walter necessarily has legs). As this case illustrates, the *de dicto* necessity may be true without the *de re* necessity obtaining. Put in these terms, Aristotle is often accused of an illicit modal inference, by deriving a *de re* necessity from a *de dicto* necessity.
11 See §2.1 for an introduction to Aristotle's conception of essence.
12 The 'hence' (*hôste*) at *APo* 71b15 challenges this interpretation, since this word standardly introduces an inference. One possible defence would treat the conclusion not as an inference of a *de re* conclusion from a *de dicto* premise, but as a reinforcing the *de re* conditions of knowledge already assumed, thus: (1) We have knowledge when we have grasped those causes which cannot be otherwise; (2) We do have some knowledge; (3) Hence, there are some causes which cannot be otherwise. This interpretation builds the *de re* modality into the premise and so avoids the illicit modal inference. Although possible, this sort of interpretation has not won wide support. The alternative, again, is to convict Aristotle of a modal fallacy.
13 The term 'appearance' (*phainomenon*) has a quasi-technical force in Aristotle. See §1.4 for more on this notion.
14 One may retort that if 'what is better known to us' can be false, that it cannot really be known at all, since knowledge is truth entailing. Although

not much turns on this point, it is perhaps worth noting that Aristotle's rich epistemic vocabulary permits him to use a sense of 'know' which is not truth entailing. The same in fact occurs in English, as in 'All the while I was *certain* that she wasn't cheating on me – but I was living a lie the whole while.'

15 In the next section, §3.4, we shall look briefly at some of Aristotle's basic principles of argumentation.

16 Importantly, (**PCP**) remains to this day a standard style of foundationalist argument in epistemology. One finds, for example, a clear and forthright expression of the argument in BonJour (1985). In general, BonJour's work provides a sophisticated and especially clear contemporary treatment of some of the issues introduced in this section.

17 Aristotle's treatment of infinity is discussed in §5.2.

18 A coherentist about epistemic justification denies that there are any beliefs that are perfectly foundational or basic. Rather, someone is justified in believing a proposition just in case that proposition coheres with that subjects complete set of beliefs. Some coherenists embrace circular justification, while others, resisting the linearity of this picture, deny that beliefs are justified by means of circular inference patterns, opting instead to regard a belief as justified holistically, in virtue of its relation to the entire set of the subjects beliefs. For a clear discussion of coherentism, see J. Kanvig, 'Coherentist Theories of Epistemic Justification', *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu/entries/justep-coherence).

19 See Barnes (1994, Introduction) for a fair-minded discussion of this matter.

20 Kant, *Critique of Pure Reason* B vii.

21 Aristotle's preferred way of speaking makes this clearer still, though it makes for somewhat awkward English: '**B** belongs to all **As**.' Throughout, I convert Aristotle's way of speaking to a more natural English idiom. In fact, there are some expositional advantages to Aristotle's preferred way of speaking, once one moves beyond the most basic presentation of his view. For a fuller yet still accessible treatment of Aristotle's logic, see R. Smith, 'Aristotle's Logic', *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu/entries/aristotle-logic/).

22 Note that these four simple types of predication fail to include structures of importance to modern logic, e.g. (i) that *if p then q* (if the dog barks, then a criminal is in the garden); (ii) *a bears R to b* (iron is heavier than helium); and (iii) every *x* is such that there is at least one *y* such that *y* bears *R* to *x* (everyone is loved by at least one person). Aristotle sometimes seems to hint that all predications can be reduced to his preferred categorical statements. If he does believe this, then he is wrong; in any event, his logic, however developed, is only a fragment of logic as we now have it.

23 If we reflect upon all possible predicational permutations, we discover there are in fact four possible moods. Scholars dispute why he does not consider all possible permutations available to him.

24 His principles are: (i) from *no A is B* we may infer that *no B is A* (if no soprano is a man, then no man is a soprano); (ii) from *some A is B*, we may infer that *some B is A* (if some woman is a soprano, then some soprano is a woman); and (iii) from *all As are Bs* we may infer that *some A is B* (if all sopranos are women, then some soprano is a woman). Importantly, from the standpoint of modern logic, (iii), however innocuous it may sound, is incorrect. It has, even where it is unwanted, *existential import*. We might agree that all dragons have wings without wanting to allow that there is some dragon with wings. Rather, what we seem to mean is: *if anything is a dragon, it has wings*, which does not license us to infer that *there is something with wings, namely a winged dragon*.
25 See McCall (1963) for detailed discussion. For admirably succinct and clear overviews, see Smith (1989), (1993), and especially his (1999), which also contains a dynamic bibliography.
26 On Aristotle's conception of *endoxa*, see §1.4.
27 See §§3.3 and 3.4 on deduction and demonstration.
28 On the requirements of science, see §3.3.
29 On *endoxa*, see §1.4.
30 On the infinite, see §§5.2 and 5.4.
31 See §3.3 for a discussion of this alternative.
32 On *APo* ii 19, see §3.3.
33 The most intricately developed and forceful approach of this kind is Irwin (1988, 7–10, 174–77), who distinguishes strong from weak dialectic. He contends that Aristotle recognizes the stronger form in his development of first philosophy in the *Metaphysics*, with the result that 'Aristotle's account of dialectic and of the starting-point of first philosophy makes it reasonable for him to claim that the method of first philosophy is both dialectical and scientific' (177). On first philosophy in the *Metaphysics*, see §6.4 below.
34 On the notion of objective explanation, see §2.2.
35 On the requirements of scientific demonstration, see §3.3.
36 Aristotle's non-demonstrative argument on behalf of the principle of non-contradiction is given in §6.5 below.
37 On deep versus shallow definitions, see 3.1; on Aristotle's account of essence, see 3.2.
38 This consideration is offered in the next chapter.
39 For a discussion of the univocity of being, see §6.4. For a fuller exploration of Aristotle's commitment to the non-univocity of being, see Shields (1999).
40 See §3.5 for a treatment of dialectic.
41 Aristotle develops other similar tests in the *Topics*. For a discussion and appraisal, see Shields (1999).
42 For a discussion of the range of Aristotle's appeals to homonymy, see Shields (1999).
43 The homonymy of being is discussed below in §6.4.

FOUR ARISTOTLE'S EARLY ONTOLOGY: CATEGORIES OF BEING, TRUTH, AND MODALITY

1 In fact the notion of paronymy is a bit fluid in English, usually being used to designate cognate terms, while at other times it seems applied to words similar in sound but different in meaning (near homonyms, in our sense of homonymy), e.g. *perspicuous* and *perspicacious*.

2 See §3.6 for an overview of Aristotle's apparatus of homonymy.

3 Ackrill (1963, 71) puts the point well: 'Aristotle relies greatly on linguistic facts and tests, but his aim is to discover truths about non-linguistic items.' A contemporary category theorist who comes to much the same conclusion makes an analogously instructive point (Lowe: 2006, 25):

> In point of fact, I do not at all think that metaphysics should be conducted entirely through the filter of language, as though syntax and semantics were our only guides to matters metaphysical – although it should hardly be surprising if natural language does reflect in its structure certain structural features of the reality which it has evolved to express.

Lowe's attitude reflects exactly what seems to be the unvoiced procedure of Aristotle's *Categories*.

4 On Aristotle's career, see §1.3. See also the Chronology of Aristotle's life in the prelims.

5 For an account of Aristotle's writings, see §1.5.

6 On the general character *Organon* and its place in Aristotle's writings, see §1.5.

7 On Aristotle's syllogistic, including the notion of *terms* appropriate to Aristotle's logic, see §3.4.

8 On demonstration as used in science, see §3.3.

9 On syllogistic, see §3.5.

10 There is an awkward transition, probably not by Aristotle, between the *Theory of Categories* and the *Post-Categories* at Categories 11b10–16. Scholars differ about what to make of this interpolation. Some suppose that it indicates that the *Post-Categories* are not genuine. Others suppose only that an editor, seeing the lack of continuity between the second and third parts of the work simply, tried, rather unsuccessfully, to build a bridge between them.

11 See Frede (1987) for a useful overview of some of the pertinent issues.

12 On homonymy and synonomy, see §3.6.

13 He mentions synonymy at *Cat.* 3a33–b9, in his treatment of substance, but then never mentions it again. Paronymy features briefly at *Cat.* 6b11–13, in the chapter of relatives, and then slightly more fully at 10a27–b11, in the treatment of quality, but is otherwise unused in the treatise. Homonymy does not make an appearance outside of its introduction in *Cat.* 1.

14 In this connection 'simples' need not be indivisible atoms, but rather simples as basic units relative to a context of appraisal. Linguists may speak of morphemes or phonemes as simples in an analogous way, without meaning that a given phoneme cannot be divided.

15 Aristotle is critical of Plato on this point, claiming that appeals participation are vacuously metaphorical (*Met.* 991a21–23; cf. *Met.* 987b9, 1031b8, 1039b2).

16 Aristotle has no end of criticisms of Platonic Forms, including: (i) they are causally inert and so cannot explain change or generation (*Met.* 991a8, 1033b26–28); (ii) postulating Forms offends theoretical economy (*Phys.* 259a8); (iii) Forms are epistemologically otiose (*Met.* 991a12–14); (iv) introducing Forms as paradigms is empty metaphor (*Met.* 991a20–23); (v) Forms cannot be essences if they are separated, because essences must be intrinsic features of things (*Met.* 991b1); (vi) Forms are irrelevant to human conduct, and so must be set aside from inquiries into ethical living (*EN* 1096b32–34). At his most caustic, Aristotle recommends a 'farewell to the Forms', since 'they are *tra-la-las* and even if they do exist they are wholly irrelevant' (*APo.* 83a32–34).

17 On essence and accident, see §3.2.

18 The question of the primacy of primary substance is investigated below in §4.3.

19 These translations of the category headings take some liberty with Aristotle's Greek. The translations given strive for some modicum of naturalness in English, even though Aristotle's Greek is a bit unnatural; they are also employed in deference to the kinds of renderings most likely to be met in standard English editions of the *Categories*.

20 See §2.5.

21 *Critique of Pure Reason* A81/B107.

22 In speaking of the underived approach to generating the categories, I do not intend to rely upon Strawson's distinction between those metaphysical theories which are descriptive versus those which are revisionary. See Strawson (1959, 9–11). Strawson treats all revisionary metaphysical schemes as in one way or another normative.

23 In fact, the names used by Aristotle for his categories are heterogeneous, including an abstract noun, interrogative-adjective pairs, and infinitives used as verbal nouns. Thus, to give some flavour of his language, 'quantity' renders *poson* (literally: 'of some quantity'), 'quality' renders *poion* (literally: 'of a certain quality'), and 'relative' renders *pros ti* (literally 'towards something' or 'in relation to something'). See Ackrill (1963, 77–8) for a succinct account of this matter.

24 See §4.2 on the provenance and internal unity of the work which has come down to us under the title, the *Categories*.

25 See §4.3 on the *said-of/in* distinction in the *Pre-Categories* (the *Antepraedicamenta*; *Cat.* 1–3).

26 For Aristotle's non-modal conception of essence, see §3.2.
27 One noteworthy exception is Jaeger (1934).
28 On the dating of Aristotle's works, see §1.5.
29 As indicated in the first sentence of this chapter, I myself accept this dating. Even so, the derivation now to be proposed merits consideration for two reasons. First, there has always been scholarly controversy about the *Categories*. Indeed, it was common in the nineteenth century to regard the work as spurious. Although worries about authenticity are very likely unfounded, it is nevertheless true that judgments about its internal unity of the work and dating must be regarded as less than definitive. Second, even if, as seems likely, the *Categories* predate Aristotle's hylomorphism, there remains a purely philosophical question as to whether a derivation of the sort discussed might nonetheless be successfully effected. See Graham (1987) for a sustained argument that the systems of the *Categories* and *Metaphysics* are irremediably incompatible.
30 For an introduction and defense of hylomorphism, see §§2.4 and 2.5.
31 This topic is discussed below in §4.5.
32 On techniques for dating Aristotle's works, see §1.4.
33 We have provided an independent grounding for Aristotle's hylomorphism in §§2.4 and 2.5.
34 Perhaps unsurprisingly, Kant in his turn was offered his comeuppance, by Hegel: 'Kant, it is well known, did not put himself to much trouble in discovering the categories' (*Logic* §42).
35 On hylomorphism's commitment to form as a positive attribute, see §2.4.
36 On hylomorphism's commitment to matter, see §2.4.
37 See §3.2 for a discussion of Aristotle's various terms for 'essence'. See also the glossary entries of 'essence' and 'substance'.
38 See §4.3 for a discussion of Aristotle's *said-of/in* distinction. For a treatment of essence and accident, see §3.2.
39 In *Categories* 5, Aristotle in fact distinguishes primary from secondary substances (*Cat.* 2a11–18, 2b7–21, 2b29–3a6). Primary substances, being neither *said-of* nor *in* are particulars (*Cat.* 3b10–23), whereas secondary substances are the species and genera of primary substances. Thus, if Socrates is a primary substance, the species human being and the genus animal are secondary substances. This is a distinction he drops outside the *Categories*, though in one place in the *Metaphysics*, he does use the phrase 'primary substance' where, tellingly, it is used not of the sorts of examples used in the *Categories* (e.g. this man or this horse (*Cat.* 2a11–13)); in the *Metaphysics*, he claims that a soul (*psuchê*) is a primary substance (*Met.* 1032b1–2). See §6.3 for a discussion of the relation of Aristotle's view of substance in the *Metaphysics* to the account given in the *Categories*.
40 See Rosenkrantz and Hoffman (1997, 9–20) for some reasonable philosophical objections of these sorts. It should be noted, however, that Aristotle expressly

recognizes in at least one case that the feature mentioned is not sufficient for substantiality. Thus, as regards the fact that primary substances lack a contrary, he says: 'this is not peculiar' to being a substance (3b24; cf. 11a15–16).

41 On substantial generation, see §2.5.

42 Ackrill (1963, 89–90) offers a succinct and persuasive assessment of this sort.

43 On the *Pre-categories*, see §4.3. On essence and accident, see §3.2.

44 An *ante rem* theorist believes that universals exist uninstantiated and do not depend upon the existence of particulars which instantiate them. This contrasts with an *in rebus* theorist, who accepts the mind-independent existence of universals, but denies that they may exist uninstantiated. Both are, however, realists about universals and thus reject nominalism, which holds that there are no universals.

45 On the distinction between *in rebus* and *ante rem* realism, see n. 44 above.

46 This seems a consequence of his rejection of fatalism in *De Interp*. 9, though the matter is disputed. See §4.7 for a discussion of this topic.

47 On the structure of the *Categories*, see §4.1. For the thought that the system of categories it presents can be derived by methods not deployed in the work itself, see §4.5. Presumably, what holds of the system of categories may hold as well of the characterizations of the individual categories discussed.

48 Aristotle in fact rejoins the inquiry into substance in much greater detail in his *Metaphysics*. See §§6.3 and 6.6 for a discussion. It is a disputed matter as to whether that discussion responds to difficulties inherent in the *Categories*. See §6.3 for the suggestion that it may.

49 See §3.4 for a discussion of terms in Aristotle's syllogistic and §4.2 for his treatment in the *Categories*.

50 For the character of the *Organan*, see §1.4; for a discussion of the place of the *Categories* in the *Organon*, see §4.2.

51 A sentence is assertoric just in case it makes a claim, and is normally thought to be truth-evaluable. Prayers, wishes, questions, and exclamations are not assertoric, whereas simple declarative sentences are. Thus, 'Please, let me win just this once' is non-assertoric, whereas, 'Jacob won again' is. As we shall see, Aristotle considers one category of assertoric sentences, future contingents, as especially problematic as regards their truth evaluability.

52 Aristotle is noting here that we do not deliberate about what is permanently or necessarily the case, since we deliberate only about what is up to us. As he suggests elsewhere, we do not deliberate about the incommensurability of the sides of a square and its diagonal or about whether to make the stars rise, because such affairs are not effected through our own agency (*EN* 1112a20–31).

53 On Aristotle's reliance on phenomena, see §1.4.

54 Note that this distinction is akin to but not precisely the same as the distinction between *de re* and *de dicto* necessity discussed in Chapter Three, n. 10.

Rather, unqualified and conditional necessity are species of *de re* and *de dicto* necessity.

55 For a discussion of whether Aristotle is guilty of this very fallacy in his *Posterior Analytics*, see §3.3. It is there argued that he needs to be read in this way.

56 On the primacy of primary substance, see §4.6.

FIVE PUZZLES OF NATURE

1 The *Physics* thus fits into the branch of theoretical inquiry concerned with entities which are not separated and are capable of change. This contrasts with the remaining two branches of theoretical inquiry, mathematics, whose objects are separable in thought though not in fact, and first philosophy, whose objects are fully and actually separate from the material sphere.

2 There is a difficulty about Aristotle's term *kinêsis*, rendered sometimes as 'change' and other times as 'motion'. Most often it means something wider than 'motion', if we restrict motion to local motion, or change through space. (Although we may also speak of there being *movement* is someone's bargaining position or in an economy or a market, we do tend in English to use 'motion' most centrally in the case of local motion.) For Aristotle, *kinêsis* is much broader, encompassing also growth, diminution and simple alteration (*Phys.* 225a26–32, 243a6, *Met.* 1068a10; *DA* 406a1–15). Moreover, Aristotle has a second term, *metabolê*, which is also best rendered as 'change', used sometimes interchangeably with *kinêsis* (Phys. 200b12–13, 218b20), though elsewhere distinguished from it (*Phys.* 225a34–b3, *Met.* 991a11). My policy in the current work has been to render kinesis as 'change' and 'motion' somewhat indifferently, as context and ease of English commend. See also the Glossary entry on change.

3 This account is introduced in §2.2 and developed and partially defended in §§2.3–2.8. A comfortable understanding of that account is presupposed in this chapter.

4 See §3.1 for an account of essence-specifying definitions.

5 On Aristotle's category theory, see §4.4.

6 On hylomorphism and the Aristotle's treatments or potentiality and actuality, see §§2.4 and 2.5.

7 For Parmenides' argument to the possibility of change and Aristotle's response, see §2.3.

8 See §5.4 for a discussion of Zeno's paradoxes of motion.

9 See §§2.4 and 2.5 for Aristotle's introduction of form and matter.

10 On the Aristotelian division of the sciences, see §1.5.

11 See Chapter Four for an overview of Aristotle's categories.

12 On Aristotle's distinction between qualitative and substantial change, see §§2.5 and 3.1.

13 On Aristotle's introduction of hylomorphism, see §§2.4 and 2.5.

14 We might also object independently that such change, as instantaneous, would seem to involve speeds faster than the speed of light.
15 On actuality and potentiality, see §2.5.
16 In fact, Aristotle's reasoning here has been variously interpreted. For an account somewhat at variance with the view offered here, see Waterlow (1982).
17 See §5.3 for a discussion of time.
18 The opening of §1.1 discusses these concerns in greater detail.
19 He rejects some of these claims, and accepts others only when suitably altered and interpreted in *Phys.* iii 8.
20 On the potential and the actual as hylomorphic concepts, see §2.4–2.5.
21 Aristotle was challenged on this point by later ancient commentators, who thought him inconsistent. He argues in *Physics* viii 1 that the universe is without beginning, but then denies the existence of an actual infinite – which is precisely what obtain, argues Philoponus (*contra Proclum* 9.14–ii.17), if the universe was uncreated. For in that case, we have just traversed an infinite number of years. Aristotle seems aware of this sort of concern in *De Caelo* i 12.
22 On Aristotle's distinction between *that it is* and *what it is*, see §§3.1 and 3.2.
23 *Confessions* XI.14.
24 *Confessions* XI.10.
25 *Confessions* XI.12.
26 *Confessions* XI.15–20 may be instructively compared with *Phys.* 217b29–218a30.
27 On the doctrine of the categories, see §4.1–4.4.
28 On Aristotle's philosophical method, see §1.5.
29 For a clear discussion of presentism and some of the issues it raises, see Crisp (2003).
30 On Aristotle's theory of categories, see §§4.1–4.4.
31 For a detailed and extremely clear introduction to some issues surrounding Aristotle's theory of time, see Hussey (1993, xxxvi–xlix, 138–75)
32 For an argument that time without change is possible, see Shoemaker (1969).
33 See Salmon (1970) for a detailed and informed treatment of approaches to Zeno's paradoxes of motion.
34 On Parmenides' argument and Aristotle's reaction to it, see §2.4.
35 Aristotle's fullest treatment of Zeno's paradoxes occurs in *Phys.* vi 9, though he also treats this first paradox also in *Phys.* vi 2 and viii 8.
36 See §5.1 for Aristotle's treatment of change and §5.2 for his conception of infinite divisibility.
37 This way of formulating (**ZR**) is *regressive*: it treats the infinite division as dividing towards the starting line from the half-way point. An alternative formulation is *progressive*: it treats the division as occurring after the half-way point. The progressive version stresses that motion cannot be completed, whereas the regressive version stresses that it cannot even be started.

38 On the infinite, see §5.2.
39 On Aristotle's introduction of his four-causal account of explanatory adequacy, see §2.2.
40 Note that so much does not entail that only something actually F can make something potentially F actually F. Rather, it is the weaker principle that something actual is required to act for something to move from potentiality to actuality.
41 On the distinction between potentiality and possibility, see §2.4.
42 On Aristotle definition of change, see §5.1.
43 The most famous version owes to the medieval Aristotelian Thomas Aquinas. See his *Summa Theologica* I art. 2, q. 3, and *Summa Contra Gentiles* I.13.3.
44 On Aristotle's definition of change, see §5.1 above. When reading and assessing the current argument, recall first that Aristotle's word '*kinêsis*' is rendered sometimes as 'change' and sometimes as 'motion', and second that locomotion is one of the four primary kinds of change.
45 See Furley (1978).
46 On Aristotle's theory of categories, see §§4.1–4.4.
47 On time, see §5.3 above, and on the infinite, see §5.2.
48 On this definition of time, see §5.3 above. Crucial to understanding the current argument is that time is a quantity of change. That is, time is to change as length is to a line.
49 On Aristotle's division of the sciences, see §1.5.
50 On Aristotle's attitude towards appearances (*phainomena*), see §1.4.

SIX SUBSTANCE AND THE SCIENCE OF BEING *QUA* BEING

1 On Aristotle's essentialism, see §3.2.
2 On causal accounts, see §2.1.
3 On the distinction between what is better known to us vs. what is better known by nature, see §3.3.
4 See Wedin (2000) and Irwin (1988).
5 Aristotle preferred to speak of 'first philosophy' or 'theology' when describing the inquiries of the *Metaphysics* (*Met.* 1026a10–19, 1064a33-b3) Indeed, he notes that without the existence of a substances beyond those constituted by nature, physics would be first science (*Met.* 1026a27–29).
6 Thus, to cite just one example, we find Aristotle promoting the existence of 'noetic matter', the sort of 'matter' which might be thought to constitute an abstract geometric figure (*Met.* 1025b34, 1036a9, 1037a34, 1045a34, and esp. 1059b16). This is a far cry from the notion of matter as the stuff which underlies change, like the quantity of bronze moulded into a statue. (See §2.4 on Aristotle's introduction of form and matter.)
7 On Aristotle's introduction of hylomorphism, see §2.4.
8 On the relation between change, continuity, and infinity, see §§5.1 and 5.2.

9 On Aristotle's distinction between being *said-of* and *in*, see §4.3.
10 This is one reason scholars persistently think of the *Categories* as an early work. On the dating of the *Categories*, see §4.2.
11 Sextus Empiricus, *Ad. Mat.* 7.135 (= 68B9).
12 On being *in* and *said-of*, see §4.3.
13 On proximate matter, see §7.5. On Aristotle's reasons for thinking that proximate matter may depend upon the form for its identity conditions, see §§2.5 and 2.8.
14 On the distinction between being *said-of* (*legetai*) and *in* (*en*) in the *Categories*, see §4.3.
15 If we do come to this conclusion, then we will have grounds to reject as untenable the proposed derivation of the categories retailed in §4.5. Indeed, many scholars would rule out that derivation on precisely these grounds. Still, as a historical matter, many other interpreters of Aristotle have read the theory of substance of the *Categories* as fully compatible with the theory of the *Metaphysics*. For one recent very sophisticated and textually informed attempt to establish this conclusion, see Wedin (2000).
16 On *endoxa*, see §1.4.
17 On the requirements of science, see §3.3.
18 See §4.5 on the principles of generating a category theory.
19 For some doubts about this enterprise, see Shields (1999). For the most persuasive case in defense of Aristotle, see Loux (1973).
20 See Chapter Two, n. 16 for a brief discussion of this matter.
21 On homonymy, see §3.6.
22 On types of homonymy, see §3.6.
23 See Shields (1999) for an extended discussion of the prospects for Aristotle's doctrine of the homonymy of being.
24 See §4.6 for a discussion of this feature of Aristotle's category theory.
25 On the categories as categories of being, see §4.2.
26 On *in rebus* realism, see Chapter Four, n. 44. Interestingly, in connection with the exactly parallel set of issues pertaining the primacy of primary substance in the *Categories*, we found Plato and Aristotle arriving at a stalemate.
27 On the nature of living beings, see §7.2; on perception, see §7.6.
28 Thus, most notably in *De Partibus Animalium*, Aristotle records reams of data, some of it off the mark, much of it surprisingly accurate, but all of it rich in empirical detail though bereft of philosophical theorizing. This is as it should be, given Aristotle's views on investigation internal to a domain of inquiry. On the status of this sort of empirical work, see Lesher (2002) and (2005).
29 See §3.3 on the demands of demonstration.
30 For Aristotle's conception of the hierarchy of souls, see §7.2.
31 At one point, Aristotle takes this point one step further: 'Such a man [who signifies nothing] will not be capable of reasoning, either with himself or with another' (*Met.* 1006a22–23).

32 Recall that demonstration (*apodeixis*) in the strict sense is a kind of deductively valid reasoning in which the premises are necessary, better known than their conclusions and universal in scope (*APo* 71b16–25, 77b5–73a6; *Met.* 981a5–30, 1006a6–18, 1039b27–1040a7). See §3.3 for a discussion.
33 On Aristotle's introduction of the science of being *qua* being and its relation to the study of substance, see §6.4.
34 On Aristotle's conception of essentialism, see §3.2.
35 See §4.6 on Aristotle's account of substance in the *Categories*. For the complication resulting from the introduction of hylomorphism, see §6.3.
36 On Aristotle's distinction between being *said-of* and *in*, see §4.3.
37 On the consequences of the introduction of hylomorphism for Aristotle's theory of substance, see §6.2.
38 One finds this strategy in play, in very different ways, in the Middle Ages and in the contemporary exegetical tradition. As we have seen in §4.5, some scholastic figures actually wanted to *derive* the categories from the principles of hylomorphism. A rather different, and highly sophisticated form of compatibilism owes to Wedin (2000).
39 On form as actuality, see §2.5.
40 On Aristotle's method, see §1.4.
41 For a succinct and accessible overview of an approach in some ways at variance with the interpretation advanced here, see Cohen (2005). For some questions raised about one aspect of that interpretation, see Shields (2005).

SEVEN LIVING BEINGS

1 Descartes, *Discourses on Method* V.
2 The flavour of Aristotle's characteristic attitude in this regard may be ascertained from a remark of his about fishes:

> For land animals, the air is transparent enough. But the water in which fishes live is a hindrance to sharp sight, though it has this advantage over the air, that it dos not contain so many objects to knock against the eyes. For this reason, nature, which makes nothing in vain, has given no eyelids to fishes, while to counterbalance the opacity of the water, it has made their eyes of fluid consistency.
>
> (*PA* 658a5–11)

3 On homonymy, see §3.6.
4 On essentialism, see §3.2; on forms as substances, see §6.6.
5 On this account of substance, see §6.6.
6 For an exception to this claim, see Shields (1999).

7 On Aristotle's commitment to teleology, including his acceptance of a Functional Determination thesis, see §§2.7 and 2.8.
8 On Aristotle's Functional Determination thesis, see §2.7.
9 On Aristotle methodological commitment to consider the views of his predecessors, see §1.4.
10 See Shields (2006) for a discussion of Aristotle's method in practice in *De Anima*.
11 For a discussion of these texts, see §6.6.
12 On matter as continuous, see §5.1.
13 See §5.5.
14 See §5.4 for a discussion of Zeno's paradoxes of motion.
15 For a presentation and assessment of Aristotle's account of the nature of form as substance, including his argument for the priority and simplicity of form, see §6.6.
16 See §7.6 below on his reasons.
17 This reasoning is discussed in §6.6.
18 On *Met.* viii 6, see §6.6.
19 For a discussion of this passage, see §6.6.
20 On the scheme of the *Categories*, see §4.4.
21 For a general introduction to Aristotle's apparatus of homonymy, see §3.6.
22 For a discussion, see §6.4.
23 For Aristotle's introduction of hylomorphism, see §2.4.
24 Shields (1999, Ch. 5) explains why this proves difficult.
25 For the teleological background to these considerations, see §2.7.
26 On Aristotle's hylomorphic analysis of change, see §5.1.
27 This approach originated with Sorabji (1971) and has been developed by Everson (1997).
28 See Tye (2005) for a good overview of the issue.
29 The most noteworthy defender of this approach is Brentano (1972).
30 On the basic analysis of change, see §5.1.
31 For a discussion of this commitment, see §3.2.
32 See §§8.1 and 8.2 below.
33 See §§2.3 and 2.4.
34 See §7.4 above.
35 On the unmoved mover, see §5.5 and *Met.* xii 7–9.

EIGHT LIVING WELL

1 In contemporary predicate logic, the mistake is easily analysed as illicitly swapping quantifiers, asserting $(\forall x)\ (\exists y)$, and inferring $(\exists y)\ (\forall x)$. Again, in natural language this is just the mistake of claiming that since every boy in the class kissed a girl, there must be a girl in the class who kissed many different boys.

2 One person Aristotle may have in mind is Eudoxus, whom he later identifies as a person who holds such a view (*EN* 1172b9–10).
3 It may count on behalf of this interpretation that Aristotle feels the need to offer an argument for this conclusion in the next chapter, *EN* i 2, fewer than twenty lines after he makes this claim.
4 Aristotle argues against the univocity of goodness in *EN* i 6.
5 See Kraut (1979) for a full and excellent discussion of a distinction between two competing conceptions of happiness. The account offered in the text approximates Kraut's approach but varies from it in several respects.
6 On the soul and its capacities, see §§7.4 and 7.6.
7 For Aristotle's teleology, see §§2.7 and 2.8.
8 It is therefore important for the purposes of understanding Aristotle's account of the human function to understand his general account of non-intentional teleological causation. See §§2.7 and 2.8 for an elucidation and partial defence of his view, where special attention is given to his functional determination thesis.
9 See §3.2.
10 We take up this issue below in §8.7.
11 Sartre (1993).
12 I will henceforth adopt the customary translation of *aretê*, but it should be borne in mind that in Aristotle's Greek this word has a broader range than the moral virtues, though it does include them. The same is true, as we have suggested, of the English word 'virtue'; still, it is easy to overlook this fact.
13 Hume, *A Treatise of Human Nature* II.iii: 'Reason is, and ought only to be the slave of the passions, and can never pretend to any other office than to serve and obey them.'
14 These two characters are the *enkratic*, the self-controlled person, and the *akratic*, the incontinent person. See §8.5 for a discussion of the akratic.
15 Thus the notion of 'moral' virtue treated by Aristotle is reasonably broad, corresponding to the notion of 'moral' in the somewhat antiquated English use pertaining to character and habits of conduct generally. Thus, Shakespeare, *All's Well That Ends Well* I. ii. 2: 'Youth, thou bear'st thy father's face . . . thy father's moral parts may'st thou inherit too.'
16 Bostock (2000, 50, 70–1) concludes on this basis that the doctrine of the mean 'cannot be upheld'.
17 This seems to be the judgment of Ross (1949, 202): 'This part of the *Ethics* presents a lively and often amusing account of the qualities admired or disliked by cultivated Greeks of Aristotle's time.'
18 See Shields (2005).
19 It should be noted, however, that some features of Aristotle's language strongly suggest that he is not speaking of the character in the dialogue, but rather of the historical figure himself.

20 On Aristotle's syllogistic, see §3.4.
21 For an excellent overview of some of the intricacies in the discussion subsequent to Aristotle, see Mele (2004). For an uncommonly clear treatment of Aristotle, see Dahl (1984).
22 On the criteria for the highest good, see §§8.1 and 8.2.
23 On the objective conception of happiness, see §§8.2 and 8.3.
24 On human beings as political animals, see §9.2.
25 Especially valuable contributions are Hardie (1980), who set the terms of the debate in modern times, Ackrill (1997) and Kraut (1989).
26 Barnes (1997, 58–9) claims that the '*EN* is an absurdity, surely put together by a desperate scribe or an unscrupulous bookseller and not united by an author or an editor', insisting 'That our *EN* is not a unity is beyond controversy – the existence of two treatments of pleasure is enough to prove the fact. The only questions concern who invented our text, and when, and from what materials, and for what motives.'
27 On the opening sentences, see §8.1.
28 There is, then, a scholarly question regarding Aristotle's language which we will not engage. See Kraut (1989, 200–25), intelligently discussed in an accessible manner by Hughes (2001, 27–31).

NINE POLITICAL ASSOCIATION

1 For the division of the sciences, see §1.5.
2 Towards this end, Aristotle arranged for the collection of some 158 constitutions. Unfortunately, only one survives, *The Constitution of Athens*.
3 A succinct introduction to the often discussed question of the order and structure of Aristotle's *Politics* may be found in Keyt and Miller (1991, 3–6).
4 This striking claim is developed below in §9.2.
5 On the objectively given ends of human beings, see §§8.1 and 8.2.
6 Aristotle primarily treats the class of political animals as a subclass of gregarious or associative animals, though he sometimes include bees, ants and other animals who 'have as their function (*ergon*) a single thing' as sociopolitcal (*Hist. An.* 487b33–488a10). Still, he insists that 'it is clear that a human being is a political animal to a greater degree than any bee or associative animal' (*Pol.* 1253a7–9).
7 On *eudaimonia*, see §8.3.
8 Aristotle does, however, exempt the bestial and the godlike (*Pol.* 1253a27–29; cf. 1253a3–4).
9 *Leviathan*, Introduction.
10 Note that the claim that the polis exists by nature contrasts differently with: (i) the claim that the state is artificial; and (ii) the claim that the state is conventional. Language may be conventional, but natural nonetheless, in the sense that it is a natural outgrowth of the capacities of human beings.

Artificial odours sprayed in chain restaurants to induce sales of one dish or another are neither natural nor conventional.

11 On homonymy, see §3.6. On the form of homonymy in play in this passage, see §7.5.

12 See §8.2 for a discussion of the requirements for the final good.

13 See §8.6 on the value of friendship for happiness.

14 By Keyt (1991).

15 This recapitulation follows the version of the story given in the *Philoctetes* by Sophocles, whose treatment was known by Aristotle (*EN* 1146a20, 1151b18). He also alludes to lost tragedies of the same name by Aeschylus (*Poet.* 1458b20–25) and Euripides (*Poet.* 1433b11–16).

16 On functional determination, see §2.7.

17 On the conditions of human happiness, see §8.2.

18 On the best life, see §8.7.

19 Taylor (1995, 241) makes this point clearly and directly:

> The thesis that the *polis* stands to the individual as whole to part is therefore aberration on Aristotle's part; it commits him to denying two central theses of his ethico-political system, that the aim of the *polis* is the promotion of the good life for its citizens, and that the central activity of the good life is the exercise of autonomous practical rationality.

20 For an alternative account of the priority see Kraut (2002, 265) who relies especially on the form of priority deployed in *Categories* 14b4–8. For a fuller discussion of a whole range of alternatives, see Miller (1995).

21 Some care is required when reading the *Politics*, however, since Aristotle at times strays into describing a constitution not in terms of a document prescribing a way of life but rather as the way of life described (thus, e.g., 1295a40–b1). No confusion need result, however. In English, 'prescription' displays an analogous duality, as between a scrip and the medicine prescribed.

22 See *Politics* iii 8, iv 4, iv 11, and vi 2 for developments of this basic approach.

23 Whatever its many real-world advantages, democracy, though the least objectionable form of deviant constitution (*Pol.* 1289b4–5), does not reliably propel those best equipped to rule into positions of political power. In this sense, concludes Aristotle, it is much less desirable than true aristocracy. For types of democracy, see *Pol.* 1291b30–1292a3.

24 On Aristotle's objective conception of happiness as identified in the function argument, see §§8.1 and 8.2.

25 On the development of the polis, see §9.2.

26 That Aristotle was familiar with some of these voices is clear from *Pol.* 1253b15–23, where he begins a discussion of those who think slavery

contrary to nature. He may, for example, have in view Alcidamus, who holds that 'nature never made any man a slave'.

27 On Aristotle's account of friendship, see §8.6.

TEN RHETORIC AND THE ARTS

1 On Aristotle's division of the sciences, see §1.5.

2 The significance of Aristotle's teleological framework for the *Rhetoric* and *Poetics* is at times underappreciated by those who approach these works unfamiliar with his broader explanatory framework. For an introduction to his approach to teleological explanation, see §2.7.

3 On the intellectual character of human flourishing, see §8.7.

4 By some ancient accounts, the young Aristotle failed to appreciate this himself. He is reported to have written a dialogue, the *Grullos*, containing an argument continuous with a theme of Plato's *Gorgias*, to the effect that rhetoric could not qualify as a *technê*, on the grounds that it lacked a defining subject matter. All conjectures regarding this matter are, however, so speculative as to be insubstantial.

5 On the division of the sciences and the distinction between science and dialectic, see §§1.4, 3.4, and 3.5.

6 Barnes (1995, 259–64) provides a lively introduction to the issues. He prefers the view that the work simply contains irreconcilable inconsistencies.

7 On syllogistic, see §3.4. It is worth noting that this use differs not only from the pre-Aristotelian notion of enthymemes but also from the dominant contemporary use, which treats enthymemetic arguments as those relying upon unstated premises (e.g. 'Xanthippe is mortal; so, she is going to die some day'). The modern sense of the term does derive from Aristotle's *Rhetoric*, though it may be that it reflects misunderstanding of his intended meaning (*Rhet.* 1357a7–18).

8 The correct translation of *mimêsis* is discussed below in §10.6, where Aristotle's approach is investigated.

9 The relative merits of various translations of *katharsis* are considered below in §10.5.

10 Janko (1984/2002) provides a reconstruction and translation of the *Tractatus Coislinianus*, which some scholars take to be a summary of the second book of Aristotle's *Poetics*. On its basis, Janko provides a highly conjectural and hypothetical reconstruction of that work.

11 On Aristotle's political naturalism, see §§9.1 and 9.2.

12 On Aristotle's essentialism, see §3.2.

13 On human flourishing, see §§8.3 and 8.7.

14 At least one component of the naïve definition, that the catharsis takes place in members of the audience, seems confirmed by *Poet.* 1452b36–38.

15 One must be mindful of the observation of Else, made already a half century ago: 'Every variety of moral, aesthetic, and therapeutic effect that is or could be experienced from tragedy has been subsumed under the venerable word at one time or another' (1957, 439).
16 Ross (1949, 282).
17 The best and most succinct review of the literature may be found in Halliwell (1986, 350–6).
18 Aristotle uses the word most often in this sense, as at *Phys.* 194b36, *GA* 727a14, and *Met.* 1013b1.
19 Still, there is a frustrating reference at *Politics* 1341b38–41, evidently to our *Poetics*, where Aristotle promises to explain the meaning of the term more clearly in 'the writings concerned with poetry'.
20 On the doctrine of the mean, see §8.4.
21 Here Aristotle may be contrasted with Plato, who, though having several notions of *mimêsis* himself, relies on the narrowest sense, of copying, in his criticism of one kind of artistic activity in *Rep.* x.
22 On Aristotle's four-causal explanatory scheme, see §2.2.
23 On happiness and human flourishing, see §§8.3 and 8.7.
24 On the goal of political association, see §9.1.
25 On the goal of rhetorical theory, see §10.2.
26 On *mimêsis*, see §10.6.
27 On science and universality, see §3.3.

ELEVEN ARISTOTLE'S LEGACY

1 Strabo, *Geo.* xiii I 54; Plutarch, *Sulla* 26 468 B–C. For a careful look at the evidence pertaining to the early fate of Aristotle's manuscripts, see Barnes (1997). For an earlier, engaging if less critical account, see Shute (1888).
2 Ammonius, *In De Int.* 5.28–29.
3 Porphyry, *Vita Plot.*, chapter 24.
4 The story of this period of philosophy is only now starting to be told. Great strides have been made in making the material of this period accessible: some fifty volumes of commentators have been translated into English under the auspices of a major initiative overseen by Richard Sorabji. The fruits of that initiative now include a three-volume source book, *The Philosophy of the Commmentators 200–600 AD* (2004), edited by Sorabji.
5 For a brief introduction to this period, see Falcon, 'Commentators on Aristotle' (http://plato.stanford.edu/entries/aristotle-commentators/). For fuller treatments, see Gottschalk (1987) and Taràn (2001).
6 Whitehead (1929, 39).
7 Gerson (2005) recounts this history and argues that it is much more credible than it is commonly taken to be.
8 See §§7.4–7.6 for discussions of these matters.

9 See §7.6 for a discussion of the active mind (*nous poiêtikos*).
10 See Owens (1993) for a treatment of Aquinas' relation to Aristotle. See Pasnau and Shields (2004, 215) for characterization of the nature of Aquinas' commentaries on Aristotle.
11 See Lowe (1995, 70–80) for an accessible assessment of Locke's attack on substantial form.
12 *On Nature Itself* §13.
13 Pasnau (2004) provides a fascinating account of the fate of substantial forms into the early Modern period.
14 Putnam (1975, 302).
15 Crisp and Slote (1997, 2).
16 Anscombe (1958). As another leading proponent of virtue ethics observes (Hursthouse, 2001, 3):

> The modern philosophers whom we think of as having put virtue ethics on the map – Anscombe, Foot, Murdoch, Williams, MacIntyre, McDowell, Nussbaum, Slote – had all absorbed Plato and Aristotle, and in some cases also Aquinas. Their criticisms of 'modern moral philosophy' were no doubt shaped by what they had found insightful in those earlier writers and then found lacking in the moderns. But the fact remains that, once they are pointed out, many people, not just those who have read the ancient Greeks, immediately recognize the topics as important ones in moral philosophy.

Bibliography

Ackrill, J. L. (1963), *Categories and De Interpretatione*, translated with notes (Clarendon Press)

—— (1981), *Aristotle the Philosopher* (Oxford University Press)

—— (1997), 'Aristotle on *Eudaimonia*', *Essays on Plato and Aristotle* (Oxford University Press), pp. 179–200

Anagnostopoulos, G. (2007), *The Blackwell Guide to Aristotle* (Blackwell)

Annas, Julia (1976), *Aristotle's Metaphysics M and N*, translated with introduction and notes (Clarendon Press)

Anscombe, G. E. M. (1958), 'Modern Moral Philosophy', *Philosophy* 33: pp. 1–19; reprinted in Roger Crisp and Michael Slote (eds) (1997), *Virtue Ethics* (Oxford University Press), pp. 28–44

Augustine (1991), *Confessions*, trans. H. Chadwick (Oxford University Press)

Bacon, F. (1900), *Advancement of Learning* (Oxford University Press)

Balme, D. (1992), *De Partibus Animalium I and De Generatione Animalium I (with passages from Book II. 1–3)*, translated with an introduction and notes (Clarendon Press)

Barnes, Jonathan (1979), *The Presocratic Philosophers* (Routledge)

——, ed. (1984), *The Complete Works of Aristotle* vols I and II (Princeton University Press)

—— (1994), *Posterior Analytics*, translated with a commentary, second edition (Clarendon Press)

——, ed. (1995), *The Cambridge Companion to Aristotle* (Cambridge University Press)

—— (1995), 'Rhetoric and Poetics', in *The Cambridge Companion to Aristotle*, ed. J. Barnes (Cambridge University Press), pp. 259–85

—— (1997), 'Roman Aristotle', in *Philosophia Togata II*, ed. J. Barnes and M. Griffith (Oxford University Press), pp. 1–69

Bedau, M. (1992), 'Where's the Good in Teleology?', *Philosophy and Phenomenological Research* 52, pp. 781–806

Beebee, H. et al. (2007), *Oxford Handbook of Causation* (Oxford University Press)

Bekker, I. (1831–70), *Aristotelis Opera*, 5 vols (Berlin)

Bodnar, I. (2006), 'Aristotle: Natural Philosophy', *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu/entries/aristotle-natphil/)

Bolton, R. (2003), 'Aristotle: Epistemology and Methodology', in C. Shields, ed., *The Blackwell Guide to Ancient Philosophy* (Blackwell), pp. 151–62

BonJour, Laurence (1985), *The Structure of Empirical Knowledge* (Harvard University Press)

Bostock, David (1994), *Aristotle: Metaphysics VII–VIII*, translated with commentary (Clarendon Press)

—— (2000), *Aristotle's Ethics* (Oxford University Press)

Boyle, Robert (1966), *A Disquisition about the Final Causes of Natural Things*, in T. Birch, ed., *The Works of the Honorable Robert Boyle*, vol. 5 (Hildesheim)

Brentano, Franz (1874/1972), *Psychology from an Empirical Standpoint* (Routledge & Kegan Paul)

Broadie, S. and Rowe, C. J. (2002), *Aristotle: Nicomachean Ethics*, translation, introduction, notes (Oxford University Press)

Burnyeat, Myles (1994), 'Enthymeme: The Logic of Persuasion', in D. J. Furley and A. Nehamas, eds, *Aristotle's Rhetoric* (Princeton University Press), pp. 3–55

Charlton, W. (1970/1984), *Physics Books I and II*, translated with introduction, commentary, note on recent work, and revised bibliography (Clarendon Press)

—— (1991), 'Aristotle's Potential Infinities', in L. Judson, ed., *Aristotle's Physics: A Collection of Essays* (Clarendon Press), pp. 129–49

Cohen, S. Marc (2005), 'Aristotle's Metaphysics', *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu/entries/aristotle-metaphysics/)

Crisp, Thomas (2003), 'Presentism', in M. Loux and D. Zimmerman, eds, *The Oxford Handbook of Metaphysics* (Oxford University Press), pp. 211–45

Crisp, Roger and Slote, Michael, eds (1997), *Virtue Ethics* (Oxford University Press)

Dahl, Norman (1984), *Practical Reason, Aristotle, and Weakness of Will* (University of Minnesota Press)

Descartes, Rene (1979), *Discourse on Method*, in *The Philosophical Works of Descartes*, vol. 1 (Cambridge University Press)

Düring, Ingemar (1957), *Aristotle in the Ancient Biographical Tradition* (Göteborg)

Else, Gerald (1957), *Aristotle's Poetics: the Argument* (Harvard University Press)

Everson, S. (1995), 'Psychology', in J. Barnes, ed., *The Cambridge Companion to Aristotle* (Cambridge University Press), pp. 168–94

—— (1997), *Aristotle on Perception* (Clarendon Press)

Falcon, A., (2005) 'Aristotle: Causality', *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu/entries/aristotle-causality/)

Fine, Gail (1984) 'Truth and Necessity in *De Interpretatione* 9', *History of Philosophy Quarterly* 1, pp. 23–47

Frede, Dorothea (1985), 'The Sea-Battle Reconsidered: A Defense of the Traditional Interpretation', *Oxford Studies in Ancient Philosophy* 3, pp. 31–87

Frede, Michael (1987), 'The Title, Unity, and Authenticity of the Aristotelian *Categories*', in *Essays in Ancient Philosophy* (University of Minnesota Press), pp. 11–28

Freeland, Cynthia (1991), 'Accidental Causes and Real Explanations', in L. Judson, ed., *Aristotle's Physics: a Collection of Essays* (Oxford University Press), pp. 49–72

Furley, David (1978), 'Self-Movers', in G. E. R. Lloyd and G. E. L. Owen, eds, *Aristotle on the Mind and Senses* (Cambridge University Press), pp. 165–79

Gerson, Lloyd (2005), *Aristotle and Other Platonists* (Cornell University Press)

Gottshalk, H. B. (1987), 'Aristotelian Philosophy in the Roman World from the Time of Cicero to the End of the Second Century AD', in H. Temporini and W. Haase, eds, *Aufstieg und Niedergang der römischen Welt*, vol. 36.2 (Walter de Gruyter), pp. 1079–174; reprinted with revisions in R. Sorabji, ed. (1990), *Aristotle Transformed: The Ancient Commentators and their Influence* (Duckworth), pp. 55–81

Graham, Daniel (1987), *Aristotle's Two Systems* (Oxford University Press)

—— (1999) *Aristotle, Physics Book VIII*, translated with a commentary (Clarendon Press)

Grote, George (1880/1899), *Aristotle* (London)

Guthrie, W. K. C. (1981), *Aristotle: An Encounter* (Cambridge University Press), pp. 18–65

Halliwell, Stephen (1986) *Aristotle's Poetics* (University of North Carolina Press)

Hankinson, R. J. (1998), *Cause and Explanation in Ancient Greek Thought* (Oxford University Press), pp. 125–200

Hardie, W. E. R. (1980), *Aristotle's Ethical Theory*, second edition (Clarendon Press)

Hegel, G. W. F. (1991), *The Encyclopedia of Logic* (Hackett)

Hobbes, Thomas (1991), *Leviathan* (Cambridge University Press)

Hughes, Gerald (2001), *Aristotle on Ethics* (Routledge)

Hume, David (1999), *An Enquiry concerning Human Understanding*, ed. Tom L. Beauchamp (Oxford University Press)

Hume, David (2000), *A Treatise of Human Nature*, eds David Fate Norton and Mary J. Norton (Oxford University Press)

Hursthouse, R. (2001), *On Virtue Ethics* (Oxford University Press)

Hussey, Edward (1993), *Aristotle, Physics Books III and IV*, translated with introduction and notes (Clarendon Press)

Irwin, Terence (1985) *Aristotle, Nicomachean Ethics*, with notes and annotated glossary (Hackett)

—— (1988), *Aristotle's First Principles* (Oxford University Press)

Irwin, Terence and Fine, Gail, *Aristotle: Selections*, translated with introduction, notes, and glossary (Hackett)

Jaeger, W. (1934), *Aristotle: Fundamentals of the History of his Development* (Oxford University Press)

Janko, Richard (1984/2002), *Aristotle on Comedy* (Duckworth Press)
Johnson, Monte Ransome (2005), *Aristotle on Teleology* (Oxford University Press)
Kant, Immanuel (1998), *The Critique of Pure Reason*, trans. and ed. Paul Guyer and Allen Wood (Cambridge University Press)
Kanvig, J., 'Coherentist Theories of Epistemic Justification', *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu/entries/justep-coherence)
Keyt, David (1991), 'The Basic Theorems in Aristotle's Politics', in David Keyt and Fred D. Miller, *A Companion to Aristotle's Politics* (Blackwell), pp. 118–41
—— (1999), *Aristotle: Politics V–VI*, translated with notes (Clarendon Press)
Keyt, David and Miller, Fred (1991), *A Companion to Aristotle's Politics* (Blackwell)
Kirwan, Christopher (1993), *Aristotle: Metaphysics Γ, Δ and E*, translated with notes, second edition (Clarendon Press)
Kraut, Richard (1979), 'Two Conceptions of Happiness', *Philosophical Review* 88, pp. 167–97
—— (1989), *Aristotle on the Human Good* (Princeton University Press)
—— (1998), *Politics Books VII and VIII*, translated with a commentary (Oxford University Press)
—— (2002), *Aristotle: Political Philosophy* (Oxford: Oxford University Press)
—— (2005a), 'Aristotle: Ethics', *Stanford Encyclopedia of Philosophy* (http://plato.-stanford.edu/entries/aristotle-ethics/)
—— ed. (2005b), *The Blackwell Guide to Aristotle's Ethics* (Blackwell)
Lear, J. (1988), *Aristotle: the Desire to Understand* (Cambridge University Press)
Lennox, James G. (2002), *On the Parts of Animals*, translated with a commentary (Clarendon Press)
—— (2005), 'Aristotle: Biology', *Stanford Encyclopedia of Philosophy* (http://plato.-stanford.edu/entries/aristotle-biology/)
Lewis, Frank (1991), *Substance and Predication in Aristotle* (Cambridge University Press)
Loux, Michael (1973), 'Aristotle on the Transcendentals', *Phronesis* 18, pp. 225–39.
—— (1991), *Primary Ousia* (Cornell University Press)
Lowe, E. J. (1995), *Locke on Human Understanding* (Routledge)
—— (2006), *The Four-Category Ontology* (Oxford University Press)
Lynch, J. P. (1972), *Aristotle's School* (University of California Press)
Madigan, Arthur (1999), *Aristotle: Metaphysics Books B and K 1–2*, translated with commentary (Clarendon Press)
Makin, S. (2006), *Metaphysics Theta*, translated with an introduction and commentary (Clarendon Press)
Matthews, Gareth (1995), '*De Anima* 2.2–4 and The Meaning of Life', in M. Nussbaum, Martha C. and A. O. Rorty, eds, *Essays on Aristotle's De Anima* (Clarendon Press), pp. 185–94
McCall, S. (1963), *Aristotle's Modal Syllogisms* (Amsterdam)

McKirahan, Richard (1992), *Principles and Proofs: Aristotle's Theory of Demonstrative Species* (Princeton University Press)

Mele, A. (2004), 'Motivated Irrationality', in A. Mele and P. Rawling, eds, *The Oxford Handbook of Rationality* (Oxford University Press), pp. 240–56

Mendell, H., (2003), 'Aristotle: Mathematics', *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu/entries/aristotle-mathematics/)

Miller, Fred D. (1995), *Nature, Justice, and Rights in Aristotle's Politics* (Oxford University Press)

—— (2003) 'Aristotle's Political Theory', *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu/entries/aristotle-politics/)

Moore, A. W. (2001), *The Infinite*, second edition (Routledge)

Moravscik, J. (1974), 'Aristotle on Adequate Explanations', *Synthese* 28, pp. 3–17

—— (1975) '*Aitia* as a Generative Factor in Aristotle's Philosophy', *Dialogue*, pp. 622–38

Newton, I. (2004), *Philosophical Writings* (Cambridge University Press)

—— (2003) 'Aristotle's Political Theory', *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu/entries/aristotle-politics/)

Owens, Joseph (1993), 'Aristotle and Aquinas', in N. Kretzmann and E. Stump, eds, *The Cambridge Companion to Aquinas* (Cambridge University Press), pp. 38–59

Pakaluk, Miachael (1998), *Aristotle: Nicomachean Ethics Books VIII and IX*, translated with a commentary (Clarendon Press)

Pasnau, Robert (2004), 'Form, Substance, and Mechanism', *Philosophical Review* 113: pp. 31–88

Pasnau, Robert and Shields, Christopher (2004), *The Philosophy of Thomas Aquinas* (Westview)

Plantinga, Alvin (1974), *The Nature of Necessity* (Oxford University Press)

Psillos, Stathis (2002), *Causation and Explanation* (Acumen)

Putnam, H. (1975), 'Philosophy and Our Mental Life', in *Mind, Language, and Reality: Philosophical Papers, Vol. 2* (Cambridge University Press), pp. 291–303

Quine, W. V. O (1960), *Word and Object* (MIT Press)

Rapp, Christof (2004) 'Aristotle's Rhetoric', *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu/entries/aristotle-rhetoric/)

Robinson, Richard (1995), *Aristotle: Politics III–IV*, translated with notes, supplementary material by David Keyt (Clarendon Press)

Rorty, Amelie O. (ed.) (1992), *Essays on Aristotle's Poetics* (Princeton University Press)

—— (ed.) (1996), *Essays on Aristotle's Rhetoric* (University of California Press)

Rosenkrantz, G. and Hoffman, J. (1997), *Substance: Its Nature and Existence* (Routledge)

Ross, W. D. (1949), *Aristotle* (Methuen)

Salmon, W. (1970/2001), *Zeno's Paradoxes* (Hackett)

Sartre, Jean-Paul (1993), *Being and Nothingness*, trans. H. Barnes (New York)

Saunders, Trevor J. (1995), *Aristotle: Politics I–II*, translated with notes (Clarendon Press)
Searle, John (2002), *The Rediscovery of Mind* (MIT Press)
Shields, Christopher (1999) *Order in Multiplicity: Homonymy in the Philosophy of Aristotle* (Oxford University Press)
—— (2001), *Classical Philosophy: A Contemporary Introduction* (Routledge)
—— (2005), 'Aristotle: Psychology', *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu/entries/aristotle-psychology/)
—— (2006), 'Unified Agency and *Akrasia* in Plato's *Republic*', in C. Bobonich and P. Destrée, eds, *Akrasia in Greek Philosophy: from Socrates to Plotinus* (Brill)
—— (2007a), 'The Aristotelian *Psuchê*', in G. Anagnastopoulos, ed., *The Blackwell Guide to Aristotle* (Blackwell)
—— (2007b) *De Anima*, translated with an introduction and commentary (Clarendon Press)
—— (ed.) (2007c) *The Oxford Handbook on Aristotle* (Oxford University Press)
Shoemaker, Sydney (1969), 'Time Without Change', *Journal of Philosophy*, pp. 363–81
Shute, Richard (1888), *On the History of the Process by which the Aristotelian Writings Arrived at their Present Form* (Clarendon Press)
Skinner, B. F. (1971/2002), *Beyond Freedom and Dignity* (Hackett)
Smith, Robin (1989), *Aristotle: Prior Analytics* (Hackett)
—— (1993) 'Aristotle on the Uses of Dialectic', *Synthese* 96, pp. 335–58
—— (1997), *Topics Books I and VIII*, with excerpts from related texts, translated with a commentary (Clarendon Press)
—— (1999) 'Aristotle's Logic', *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu/entries/aristotle-logic/)
Sorabji, Richard (1971), 'Aristotle on Demarcating the Five Senses', *The Philosophical Review* 80: pp. 55–79
—— (1983), *Time, Creation and the Continuum* (Duckworth)
—— (2004), *The Philosophy of the Commmentators 200–600 AD*, vols 1–3 (Duckworth)
Strawson, Peter (1959), *Individuals* (London)
—— (1992), *Analysis and Metaphysics* (Oxford University Press)
Studtmann, P. (2006), 'Aristotle: Categories', *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu/entries/aristotle-categories/)
Taràn, L. (2001), 'Aristotelianism in the 1st Century BC', in *Collected Papers* (Leiden), pp. 479–52
Taylor, C. C. W. (1990), 'Aristotle's Epistemology', in S. Everson, ed., *Companion to Ancient Thought 1: Epistemology* (Cambridge University Press), pp. 116–42
—— (1995), 'Politics', in *The Cambridge Companion to Aristotle*, ed. J. Barnes, (Cambridge University Press), pp. 233–58
—— (2006), *Nicomachean Ethics, Books II–IV*, translated with an introduction and commentary (Clarendon Press)

Tye, Michael (2005), 'On the Nonconceptual Content of Experience', in *Experience and Analysis*, ed. M. E. Reicher and J. C. Marek (Austrian Ludwig Wittgenstein Society), pp. 221–39

Waterlow, Sarah (1982), *Nature, Change, and Agency in Aristotle's Physics* (Clarendon Press)

Wedin, Michael (2000), *Aristotle's Theory of Substance* (Oxford University Press)

Weidamann, H. (2007), '*Aristotle's De Interpretatione*', in C. Shields, ed., *The Oxford Handbook on Aristotle* (Oxford University Press)

Whitaker, C. W. A. (1995), *Aristotle's De Interpretatione: Contradiction and Dialectic* (Oxforfd University Press)

Whitehead, A. N. (1929), *Process and Reality* (Macmillan)

Williams, C. J. F. (1982), *Aristotle's De Generatione et Corruptione*, translated with notes (Clarendon Press)

Witt, C. (1989), *Substance and Essence in Aristotle* (Cornell University Press)

Woods, Michael (1982), *Aristotle's Eudemian Ethics Books I, II, and VIII*, translated with a commentary (Clarendon Press)

Zeller, Eduard (1931), *Outlines of the History of Greek Philosophy*, 13th edition (Routledge)

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