'This is not the truth': A methodological inquiry into the classical Greek origins of political realism

Orton, Jane

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A Methodological Inquiry into the Classical Greek Origins of Political Realism

Jane Orton

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Introduction and Methodology

In a single episode of the Peloponnesian War, the foreign policy employed by Athens results in the slaughter of all Melian men of military age and the selling of Melian women and children into slavery. This is not atypical of Athenian policy during the Peloponnesian War; throughout the period, Athens exercises the approach to politics that we have come to call 'political realism.' In Thucydides' *History of the Peloponnesian War*, the Athenians tell the people of Melos,

> ...you know as well as we do that, when these matters are discussed by practical people, the standard of justice depends on the equality of power to compel and that in fact the strong do what they have the power to do and the weak accept what they have to accept.[1]

This approach is the subject of much debate in fifth century Athens, where an intellectual elite attempts to fit itself for involvement in public life. Teachers of rhetoric from all over the Greek world are employed to verse wealthy young men in the construction of political argument, resulting in the flourishing of discussions about the nature and purpose of policy. Political realism finds keen proponents: in *Republic*, Thrasymachus tells us that 'justice or right is simply what is in the interest of the stronger party.'[2]

We are to feel that the proponent of political realism is stripping away the 'fine phrases'[3] of conventional morality to reveal the actuality: the rules are made by those who have the capacity to implement their own will; everyone else must submit to the stronger party. Conclusions and policy recommendations are drawn from an analysis of the political situation as it actually *is*, in terms of the power relationships that exist between political entities, without reference to moral ideals. The virtue of this approach, it is supposed, is that it does not rely upon unproven moral absolutes that divorce theory from reality.

It is tempting to see Classical Greek political realism as both a necessary and a historical development of the moral relativism that emerges in the intellectual life

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[1] Thucydides, *History of the Peloponnesian War* V 89
[2] Plato, *Republic* 354b
[3] Ibid V 89

of fifth century Athens. This is part of a wider epistemological relativism, embodied in Protagoras' 'Measure' doctrine:

> Man is the measure of all things, of things that are that they are and of things that are not that they are not.[4]

The nature of knowledge, according to this view, does not allow us to speak in absolutes: we cannot speak of anything being unconditionally true, either because we cannot access the information we need to do so or because the truth simply does not exist independently of us. Nowhere are the implications of this more potent than in political theory: if we cannot speak of moral absolutes, the construction of a policy that incorporates them is immediately devoid of a sound philosophical foundation.

The temptation is to say that this moral relativism necessarily culminates in political realism: if moral absolutes are not really 'there,' then there is nothing to stop the stronger party exercising its own will over the weaker, and the only political reality we have left does seem to be the power relationships that exist between various political entities. In historical terms, Classical Greek political realism is said to find its roots in the moral relativism of the fifth century.[5] Protagoras and Thrasymachus were both Sophists, professional teachers who promised, for a fee, to fit young men for political life by teaching them the art of rhetoric and, in some cases ἀρετή, or political virtue.

Many early Sophists, like Protagoras, are relativists. The so-called Radical Sophists are thought to develop the implications of this relativism into political realism. There is no 'right' interpretation of justice independent of us. What is implemented in the name of justice is, according to Thrasymachus, the interests of the stronger party.

This is the myth to which we are supposed to subscribe: but it is a myth. We shall expose it as such on two counts: we shall demonstrate that it is not a necessary truth that political realism originates from the moral relativism and we shall show that it is not a historical truth that Classical Greek political realism grows from the moral relativism associated with the Early Sophists.

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[4] Diogenes Laertius, *Lives of Eminent Philosophers* 9.8.51
[5] Dyson [2005] Ch 1

How to go about this? In exposing a myth, the most important thing to bear in mind is that we must be careful to avoid creating a new myth to replace it. Our methodology must be stated and justified. We must specify precisely in what way the old account is erroneous and how our account is to avoid vulnerability to the same charge. This is the aim of the current introduction.

Methodology as the Framework for Analysing Political Realism

This is to be a methodological inquiry into the origins of Classical Greek political realism. The focus here is methodology; its significance twofold. Firstly, the methodology of this investigation is to be that of an inquiry, rather than a narrative. Assertions will be justified as needed, at the expense of a smooth telling of the story. Indeed, the original meaning of the word, 'history', ἱτορίη, is closer to 'inquiry' than 'narrative.'[6] We shall see that the former sense, although resulting in more stilted accounts, is actually more appropriate for our purposes. An inquiry must justify how the conclusions of that investigation arise. A narrative need only be a retelling of the story, with no means of deciding why we should replace the old account with the new. By rejecting this approach, we are also able to make clear which of our own claims are speculative and which are not.

Secondly, our focus upon methodology is significant because it is to be in virtue of the differing methodologies of political realism and moral relativism that we shall refute the myth that the former originated in the latter.

Note the focus of the question upon political realism and its origins, as opposed to a question which focuses upon whether the views of the Radical Sophists can be said to have derived from those of the early Sophists. This is quite deliberate, as it seems that the latter approach falls into the trap of 'putting the cart before the horses.' It is sometimes easy, although ultimately dishonest, to juggle a definition to support a given thesis, to define *x* as *y* to support the thesis 'all *x*s are *y*.' For example, Jaacqueline de Romilly[7] wishes to stress the influence of the Sophists in philosophy[8]: Euthydemus is named as a Sophist, but receives only two mentions, being branded as 'less philosophical'. However, when considering

[6] See Herodotus, *Histories* I.1: ἱτορίης ἀπόδεξις, the setting forth of an inquiry.
[7] Romilly, [1992]
[8] Ibid p 236

whether Callicles is a Sophist, she considers his contempt of those who pursue philosophy into old age, she declares, 'No Sophist could have said such a thing.'[9] She has, in the case of Euthydemus, acknowledged the existence of Sophists who are less interested in philosophy and dismissed them as less eminent, and therefore, less interesting. Yet part of the reason she does not consider Callicles to be a Sophist is because of his lack of interest in philosophy, thus implicitly and illegitimately building philosophical concern into her definition of 'Sophist.'

The other danger to be avoided is that of selecting evidence upon the basis of whether or not it supports the thesis, as de Romilly does. She wishes to say that the Sophists provide a negative critique of conventional morality, and then she reconstructs a 'lucid humanism'[10] upon the resulting *tabula rasa.* She decides that Callicles, who she says embodies the extreme immoralism resulting from taking the Sophists' negative critique in isolation,[11] is not to be considered a Sophist. This decision is made partly upon the basis outlined above and partly upon the fact that he does not teach.[12] On the other hand, Critias, who helps to spread the ideas of the Sophists but does not teach for money[13] 'almost qualifies as a Sophist'.[14] Critias is used to support de Romilly's claim that the Sophists are 'certainly interested in morality'[15] and to show the wide-ranging interests of the Sophists,[16] as de Romilly attempts to construct a Sophistic humanism.

To some extent, making the investigation idea-focused rather than focused around 'what the Sophists think' can escape these difficulties. This approach certainly does maximise the evidence available: just as some people may wish to dismiss some thinkers as irrelevant or not eligible for consideration,[17] other people may wish to consider thinkers who are not Sophists according to their own definitions. [18] Focusing the investigation upon an idea means that all relevant thinkers may be considered.

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[9] Ibid p 157
[10] Ibid p 186
[11] Ibid p 140
[12] Ibid p 156-7
[13] Ibid p 108
[14] Ibid p 213
[15] Ibid p 222
[16] Ibid p 226
[17] As Romilly does with Euthydemus, Dionysodorus and Callicles.
[18] See, for example, Guthrie [1995] and Untersteiner [1954] who both wish to consider Callicles and Critias, although neither fits Guthrie's or Untersteiner's definition of a Sophist.

Maximising the evidence available for selection is one step closer to a dispassionate method, but there is still a danger that the thinkers could be selected upon the basis of whether they support the thesis in question. In order to avoid this, care will be taken to justify the consideration of particular thinkers, and the type of evidence used, especially where there is any debate on the matter. Given de Romilly's assertions, this will be especially important in the case of Euthydemus and Dionysodorus. Moreover, we must not shy away from the consideration of evidence that would seem to contradict our thesis: such evidence must be examined and refuted. Examples of such refutation can be found in our consideration of Booth's arguments for the absence of a pattern in Zeno's paradoxes of motion, and in our rejection of Aristotle's view of Democritus in *Metaphysics*. In terms of integrity, this refutation of scholarship that contradicts our account is actually more important than the citing of that which supports it, and consequently more time shall be devoted to this. Writing intellectual history is as much about the *de*construction of the views of commentators, as it is about the *re*construction of the views of the thinkers themselves.

Similarly, the chosen framework for analysis must be duly justified. The framework for analysis here is to be the differing methodologies leading to political realism and moral relativism respectively. On the basis of the findings that this presents –ie, that the methodologies leading to each position are very different - we are to conclude that political realism does not originate from moral relativism. However, we need to ensure that the selection of this particular framework can be justified for reasons other than that it gives the results we are looking for: otherwise, we fall into the same kind of trap outlined above. The selection of methodology as framework can be justified in three ways.

Firstly, looking at the conclusions of the thinkers without looking at how they reach those conclusions (their methodologies) can give us patterns, but not explanatory power. Let us review two instances of this. In the first, Dyson[19] points to the Radical Sophists' belief that war is natural, and highlights the similarity of that belief to Heraclitus' views on war. In the second, and especially relevant to our concerns, both Dyson and de Romilly wish to say that the conclusion of one thinker

[19] Dyson [2005] Ch 1

may lead to the conclusion of another.[20] They say that the 'might is right' is either an extreme consequence of the relativism of the early sophists,[21] or at the very least, that the law of the strongest is an inherent danger, 'the next step, which might or might not be taken.'[22]

In both cases, the focus upon the conclusions of the thinkers in question lack explanatory power. In the first case, it is certainly true that Heraclitus and some of the Radical Sophists, like Thrasymachus, speak of war as a natural state. However, this tells us little more than the fact that 'war as natural' is a shared concern; and even this assertion must be treated with caution. If we look at Heraclitus' fragment in Origen, we see that war is to him necessary and just:

> But one must know that war is a mutual thing, and justice is strife, and that everything comes into being through strife and necessity. [23]

Also, to Heraclitus, this state of war is associated with an underlying unity in the universe:

> People do not understand how what is diverse [nevertheless] coincides with itself, just like the harmony of a bow and lyre.[24]

This is very different from the point that Dyson is trying to make about the Radical Sophists' view of the natural state of war:

> ...that the natural (and by implication, good and healthy) impulse of human beings is to strive to outdo one another...[25]

It is a useful comparison in a contextual sense: we can see that the theme of war is a concern in fifth and sixth century debate, but, as it stands, the comparison

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[20] Dyson, [2005] and Romilly, [1992]
[21] Dyson , [2005]
[22] Romilly, [1992] p 159: Callicles is said to draw 'practical rules of action from the analysis of the Sophists.'
[23] Origen, *Contra Celsum* VI, 42
[24] Hippolytus, *The Refutation of All Heresies* IX, IV. For Heraclitus' other fragments on the theme of unity, see also Hippolytus IX, V.
[25] Dyson [2005] p 26

does little to explain why harmony and unity result from strife for Heraclitus, but not for Thrasymachus.

Let us now turn to the other case we mentioned, the assertion that the relativist approach leads to political realism. Here, focusing on conclusions does not explain why relativism should lead to political realism, as opposed to conservatism or any other political theory: conversely, we have evidence of Protagoras' preference for conservatism. The comparison is made between Protagoras, in whom we can find the view that there is no such thing as absolute justice, and Thrasymachus, who claims to strip away the false claims about justice, and defines it as the interest of the stronger party. While it is true that both thinkers are concerned with exposing the fictitious view of absolute moral justice, this comparison does little to explain how they arrive at their very different political accounts. In examining the methodology of each account, discovering how each thinker reached his conclusions, we shall be able to learn more about the nature of each, which in turn can explain any policy recommendations that are made.

The methodological approach allows us to do this because it leads to an understanding of the material, rather than a series of judgements. Consider Plato's story of Socrates and the slave-boy in *Meno*: before Socrates helps the boy to see how it is that 'the square of the diagonal is double its area,'[26] the boy has only opinions. When he investigates how it is that this principle comes to be, his opinions are 'tethered' down as knowledge. An examination of how that rule works produces understanding. Similarly, by examining how these thinkers reach their conclusions, we may attain a greater understanding of them.

The second justification for using methodology as a framework for analysis is that it imitates the formation of political theory itself. Thinkers do not simply pluck ideas out of the air: they reach their conclusions by following what they think is the appropriate method. If we consider current debates in international relations theory (although, as we shall see, comparisons between the ancient and the modern should be treated merely as analogies, not as standards from which to derive general principles) we can see that methodology is a prime concern in the formation of

[26] Plato, *Meno* 85b

theory. For example, the modern debate focuses upon whether theory should be built around what we should strive to attain, or what actually is the case.[27]

A parallel can be drawn with Classical Greek political theory. Methodology is certainly a concern in Presocratic debate, as illustrated by the beginning of Diogenes' treatise:

> At the beginning of every discourse, I consider that one ought to make the starting point unmistakably clear and the exposition simple and dignified.[28]

As we shall see, this attention to methodology continues from the Pre-Socratics to the Sophists and the dialogues of Plato.[29] It is not the case that any one conclusion is taken as proved by another thinker, with new theories built around these: each thinker has his own epistemology and arrives at his conclusions via that approach. This will become clear as we examine each thinker's epistemological concerns: the obstacles to attaining knowledge and what methodological steps must be taken to overcome these are different in each theory. Because methodology is wider than epistemology, we are also able to consider metaphysical and linguistic concerns, which will be especially useful in our section on Gorgias.

The third justification for using methodology as our framework is that it is potentially more enduring considering the nature of the material. Any reconstructions of Presocratic and Sophistic accounts are necessarily hampered by the fragmented nature of the evidence; the unreliability of the ancient commentators and the format of the material itself, as will be discussed shortly.[30] Because of this, all reconstructions are provisional, as are the conclusions we draw for them. *Providing* that our reconstruction is complete, *providing* that a new fragment will not be discovered that contradicts what we thought the previous evidence might point to, we may claim to know what a thinker says. By focusing on methodology, we have a sturdier framework. The inevitable academic debate that follows the

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[27] For example, Morgenthau [1993], especially Ch. 1

[28] Diogenes Laertius, *Lives* 9.57

[29] Concerning Plato, see the use of contradicting hypotheses in *Parmenides* and the acclaim of that method in *Sophist* 217c; the attention to νόησις as a method of attaining knowledge in *Republic,* 509d-511e; and Plato's distinction between methodologies, as discussed by Kerferd [1981] Ch. 6 and Nehamas, [1999]

[30] Good discussions of these problems applied to particular thinkers can be found in Gershenson and Greenberg [1964] Ch. 3

publication of new fragments is greatly concerned with how to relate these to other fragments. [31] Therefore, an understanding of how that theorist arrives at his conclusions is useful in incorporating the new evidence.

Additionally, as far as our question is concerned, it is notable that most previous attempts to rescue the moral relativism of the Early Sophists from the charge that it is a prelude to political realism have focused upon the conclusions of the thinkers: they have been attempts to construct moral doctrines out of the fragments of the Early Sophists.[32] As we shall see, this often requires the exclusion of some important pieces of evidence. The argument from methodology does not rely on the selective reconstruction that this requires. On the contrary, by drawing upon the examination of methodologies from mathematics, the natural sciences, literature, logic and moral philosophy, it makes use of the widest selection of the evidence available.

Problems in Reconstruction

Clearly, reconstruction is a problem, so we should adopt a systematic approach to it. There are three problems of reconstruction: the nature of the fragments themselves; the need to organise the evidence we have and 'fill in the gaps'; and finally, our analysis of the result. We shall now consider each of these.

i) Accuracy and Reliability of the Fragments and Testimonia

Firstly, let us consider the use of fragments and testimonia in reconstructing accounts. This is to be our primary evidence, but it is problematic in that we are relying upon the exactitude of other writers, which can be deficient in a number of ways. In some cases, the writer may not have the technical skills or inclination to report accurately, especially in the case of historians of mathematics.[33] In others, the writer may have his own agenda, which may lead him to misrepresent the views of the thinker we are trying to reconstruct.

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[31] For example, Kerferd [1956-7]
[32] Eg, Romilly [1992] Grote, [1851]
[33] See Knorr, [1986] p 2

An example of this can be found in Origen's *Contra Celsum*, in which Origen reports Celsus as attributing to Heraclitus a hint at divine war, before citing the fragment discussed above. Celsus has been trying to present Christianity as a perversion of ideas that are better expressed by the Greek philosophers, attacking here the Christian idea of the devil as a power opposed to God. The fragment itself is presented as a direct quote, so we have less reason to doubt its authenticity, but we should be more hesitant to accept that Heraclitus does hint at a divine war, as it is quite likely that Celsus is interpreting the given fragment of Heraclitus in the way that best fits his own agenda.

An additional problem is that some writers may simply make mistakes. For example, Diogenes of Oenoanda, whose work itself survives only in fragmentary form, provides us with a version of Protagoras' denial of knowledge of the gods' existence. Unlike other evidence for this, he asserts that Protagoras' agnosticism amounts to atheism. [34] It would not be unreasonable to dismiss this as a misunderstanding of Protagoras' philosophy: Diogenes is not a serious philosopher or historian – he wishes only to preserve and uphold the teachings of Epicurus, and is able to do so in virtue of his wealth, rather than his intellectual skills. He also makes a serious mistake in another fragment, where he attributes the doctrine of flux to Aristotle.[35] Additionally, Diogenes has his own agenda here: he is trying to say that it is not the Epicureans who do away with the gods, but others. The Epicureans are under attack from a growing number of Christian writers at the time,[36] so Diogenes has a good reason to make a wrongful attribution of atheism to Protagoras, either through wishful thinking, a genuine mistake, or wilful misrepresentation.

The only way to overcome these difficulties when conducting a reconstruction is to assess each piece of evidence on its own merit: different preservations of the fragments should be compared where possible, and we should be explicit about our own agenda and dispassionate when evaluating possible evidence for it. For example, we may use the evidence from Sextus Empiricus,

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[34] Diogenes of Oenoanda, *The Fragments* Fragment 11

[35] See Fragment 4: Diogenes says that, according to Aristotle, nothing can be scientifically known, as everything is in flux. In his commentary on this, Chiltern tries to say that this may not have been a mistake, citing the Platonic denial of the possibility of sense knowledge that is to be found in early Aristotle – but it is still a grave distortion of Aristotle, given a survey of his works, and this serves to highlight a serious problem in reconstruction.

[36] Dionysus, Bishop of Alexandria; Lactantius; Tertullian.

Eusebius and Diogenes Laertius, and note the greater intellectual respectability of these sources, in our rejection of Diogenes of Oenoanda's account of Protagoras' atheism.[37]

Aside from the problem of inexact preservation of the fragments, we should also be aware that the nature of the fragments themselves can be misleading. A model speech, for example, is exactly that: it does not strive to present the views of the writer. In one case at least, it explicitly states that it is just an exercise written for amusement.[38] We should pay attention to the difference in the forms that the evidence can take.

Similarly, when looking at Platonic dialogues in which the fragments are preserved, it is also useful to distinguish between the different ways that Plato presents the speakers. It is hardly appropriate to construct for Euthydemus, for example, a philosophy including the idea that it is the ignorant who learn, when it is made clear[39] that this is part of an eristic display and that assertion was based wholly upon Cleinias' answer, not upon Euthydemus' own conviction. On the other hand, we may wish to say that the views of Protagoras and Gorgias in the respectively named dialogues do represent the views of these men, as the dialogues are presented as records of private discussions, in which the speakers are giving their own ideas. This tells us that Plato was trying to present the thinkers' views in their own words.

Moreover, we need to consider the accuracy of Plato's own reconstructions, like the ones he has Socrates produce (as opposed to those accounts he reports as coming from the speakers themselves). For example, are we to take the account that Socrates gives of Protagoras' doctrine in *Theatetus* seriously, based upon Socrates' attempts to be fair,[40] or should we be more suspicious due to his fear of error[41] and the use of the idea of a 'secret doctrine'?[42] Again, the solution is to assess each piece of evidence on its own merit, paying particular attention to the structure and nature of the source in which it is preserved. For example, in Chapter Two, it is necessary to consider the structure and purpose of the *Physics* in order to establish what Aristotle is claiming Zeno explicitly states, and what he believes Zeno must

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[37] Diogenes Laertius, *Lives* 9.8.51; Cf Sextus Empiricus, *Against the Physicists* I.56; Cf Eusebius, *Preparation of the Gospel* in Sprague [2001] p 20
[38] Gorgias' *Helen* in Robin Waterfield [2000] pp 228-231
[39] Plato, *Euthydemus* 275e
[40] Plato, *Theaetetus* 166a
[41] Ibid 168c, 171d
[42] Ibid 152de

implicitly assume. We should be aware of what the writer is asking us to accept, before we assess the credibility of the writer himself.

For this reason, it is imperative that we refer to the sources themselves, and do not rely upon volumes which merely include collections of fragments as the basis of our reconstructions. As will become evident, the context in which the fragment is preserved is a primary tool in historical reconstruction; its consideration is of great value to the historian. Without it, we rob ourselves of the means to overcome the deficiencies of those who preserve the fragments, and increase the likelihood of wishful, dishonest interpretation. Without context, the self-knowledge of Thales, Heraclitus and Socrates is the same; with it, we can see that Thales' self-knowledge is mystical, Heraclitus' is an epistemological tool and Socrates' is a means to virtue.[43] The use of footnotes in this paper is consequently of the highest importance; for this reason the full title of the primary sources is explicitly stated in the footnotes. In the absence of complete surviving works of the thinkers, every claim we make about them must be justified. Footnotes indicating the source from which each claim arises are the most efficient means of ensuring strict intellectual honesty and fidelity to the evidence available.

ii) Reconstruction Using the Fragments

Let us now consider how we should go about organising this evidence into a complete account of the theory of each thinker. Our problem is that the evidence we have omits large quantities of information that we need to constitute complete accounts. Makin[44] believes that we should pay attention to the supposed intent of the thinker for his theory to be consistent. He says that we should follow the same rules when reconstructing a theory that translators use, namely using a 'principle of charity.' If a word in a text is obscure, it *might* be the case that what the author actually wrote is ungrammatical, but it is reasonable to suppose that he intended to produce a grammatical piece. Therefore, the word should be translated grammatically.

If we follow this technique in reconstruction, we begin from the assumption that the thinker is trying to produce a coherent theory. Makin uses the example of

[43] See Chapter One: sections on Thales and Heraclitus.
[44] Makin [1988]

Democritus: he wishes to find out Democritus' reasoning in holding that the ἄτομον[45] is indivisible. He decides that Democritus thinks that the ἄτομ is indivisible because it is homogenous, on the basis that this both makes philosophical sense and is consistent with the other things that Democritus says.

However, Makin is not justified in drawing this parallel between grammar and philosophy for three reasons. Firstly, it is not even a good analogy: correct grammar is decided by a set of agreed rules which enable the writer to communicate what he is saying to other people. Philosophy is *what the writer is actually saying.* Makin assumes that there are agreed rules to contain this, whereas, as we shall see,[46] so much of philosophy involves the setting out of one's own framework for analysis. Even if the thinker *is* aiming to be consistent, his account of what that entails will be set out in the theory that we are trying to reconstruct. We cannot access his account without first having reconstructed the theory: Makin's argument amounts to translating a grammar book with a presupposed idea of the rules of grammar it contains.

The second reason that Makin's method fails is that, even given that the thinker wishes to be consistent, and we know what he thinks this entails, we need to know which part of his theory he would sacrifice if faced with inconsistency. For example, Makin rejects the idea that Democritus holds the atom to be indivisible based upon the fact that an ἄτομον is partless. This, he says, is inconsistent with Democritus' other claim, that ἄτομα can differ. This conclusion rests on the unproven assumption that if Democritus does assert that ἄτομα are partless, he would sacrifice this claim in order to preserve the claim that ἄτομα can differ. Remember that Makin's analogy does not exclude the possibility that a thinker can be inconsistent – he has admitted that a writer can be ungrammatical – he only claims that the theorist *intends* the theory to be consistent. If Democritus holds these two inconsistent claims, Makin thinks that he would be willing to sacrifice one of them for the greater good of a coherent theory. There is no reason to suppose, however, that the claim that survives in the fragments would be the one that Democritus would wish to keep. Imagine that Democritus does make these two

[45] Τὸ ἄτομον is an adjective standing in apposition to a noun. It is from τόμος, cutting, with 'α' to indicate want or absence; thus, ἄτομος is literally, 'uncuttable.' The Greek sources sometimes use the masculine, ἀτομόυς (masculine, accusative plural), eg Simplicuis in Kirk, Raven and Schofield [1983] p 414, but more often, the neuter is used, eg ἄτομα (neuter plural) in Aristotle, *Metaphysics* 1039a; Sextus Empiricus, *Against the Logicians* I.136. We shall use the neuter form as standard.

[46] See the section on Protagoras for this especially.

claims and would consent to the eradication of one of them from his theory. Makin has overlooked the possibility that Democritus may wish to keep the partless ἄτομα and sacrifice the notion that ἄτομα can differ, perhaps on the basis that partless ἄτομα are a better refutation of Zeno.

We shall reject Makin's method of reconstruction for a third reason. Makin is assuming a standard of philosophical coherence universal to all. Our first point was that the rules of coherence, to which a philosopher may subscribe, form part of the theory that he sets out. Makin assumes that there is a standard of philosophical coherence over and above that to which any thinker may subscribe. He is implicitly claiming that not only must we assume that the thinker wishes to be consistent, but also that we must assume that the thinker wishes to meet some standard of clarity distinct from his own theory.

Makin rejects the idea that Democritus' view of atoms arises from a conviction that ἄτομα are the minimum conceivable, because this is philosophically incoherent. However, it is not clear how Makin arrives at this conclusion: philosophers today still make use of the notion of a minimum conceivable when discussing the possibility of discrete space. Makin's account of philosophical coherence seems to differ from that of other philosophers', just as philosophers in the past have disagreed. Parmenides, for example, may wish to point out that the idea of generation is philosophically incoherent, whereas Aristotle would disagree. This absence of a consensus about what is and is not philosophically coherent suggests that there is no one standard of coherence to which we can refer. This brings us back to our first objection to Makin: we need to refer to the account of the thinker in question to grasp *his* notion of coherence, as this is the only standard to which he can be said to have intended to attain.

None of this means that Democritus' reasoning for saying that ἄτομα are indivisible is *not* because they are homogenous: but Makin cannot claim the certainty that he wishes for this, and his approach could actually be harmful in other ways. We should not wish to say, for example, that we can reject Protagoras' 'Measure' doctrine or its implications on the basis that it leads to philosophical inconsistencies – indeed, we *should* ask how or whether the evidence we have for Protagoras shows him to be an inconsistent thinker. Trying to 'make' Protagoras consistent before we have even engaged with this debate would be a severe handicap to our understanding of him.

Makin's main problem is that his method is not sensitive enough to the extent to which a thinker's framework for analysis is integrated into his theory. This will be a problem for us, but we can overcome this to an extent if we have access to a declaration of the thinker's priorities. Our examination of each thinker will pay particular attention to evidence of that thinker's epistemology: if we know something of the way in which a theorist feels that conclusions should be reached, we are equipped to apply this to particular cases. For example, Democritus thinks that sense-data can be deceptive,[47] so we may wish to use this as a check when reconstructing his account. Most importantly, we should be aware of the complexity of reconstruction: each theorist has his own particular methodology, and reconstructions should be made within that context, not upon the basis of our own imposed standards.

iii) Analysis of the Reconstruction

We have seen that two of the problems of reconstruction, the first concerning the fragments and testimonia and the second concerning our organisation and completion of the evidence, require us to be aware of the particular nature of each thinker in reconstruction. In the third problem, the problem of analysing the reconstructed account, we shall see that a focus on particulars, rather than generalisations, is equally important. There are two aspects of this: the analysis of what the account is in itself, and the analysis of how the account fits into the context of the time in which it is written.

a) The Theory in Itself

As we have seen, we need to use a good deal of analysis when we are reconstructing the accounts, because the reconstructions are to be made within the context of our growing understanding of that thinker. When we have our reconstruction, we may begin to draw more general conclusions about the nature of that theory. There are several things to bear in mind here. As in the problem of reconstruction, we should refrain from analysing the accounts according to our own

[47] Aristotle, *Metaphysics* 1009b

imposed ontology. This happens when a philosopher makes up his mind about a particular framework that should be used in the solution of philosophical problems, and proceeds to examine thinkers in terms of this, when the thinkers themselves do not subscribe to it.

For example, Mourelatos examines Heraclitus and Parmenides in terms of their resolutions of the tensions implicit in the 'naïve metaphysics of things' and the use of his three requirements of character-powers.[48] Here, Mourelatos is imposing his own framework of analysis upon Heraclitus and Parmenides: they do not subscribe to it. That is not to say that Mourelatos is making erroneous claims: if applied systematically, his approach could provide an accurate account of Heraclitus and Parmenides in terms of the Naïve Metaphysics of Things. However, all this tells us is how the evidence from Heraclitus and Parmenides fits into Mourelatos' philosophy. The result will be a distorted account of what Heraclitus and Parmenides are trying to do. This paper is primarily an historical account: we shall limit ourselves to the use of philosophy as an historical tool. It is the thinkers themselves that we are interested in: not how we can reinterpret history to fit our own ontological categories, nor the philosophical validity of their accounts.

We should also avoid accepting and reinforcing existing myths about historical trends. For example, a great deal is made of the transition from μῦθος to λόγος that is said to have been occurring during the fifth and sixth centuries.[49] There is a lot of truth in this, but when we are constructing our account, we need to try to deconstruct established ways of seeing the past. For example, we shall look at the methodologies of the early scientists, but if we begin from the idea that they are part of the trend moving away from myth, towards reason, we may be tempted to reconstruct a more rational methodology than we can justify. If the 'μῦθος to λόγος' description is genuinely accurate, and if our inquiry is appropriate and meticulous, we shall produce that description anyway. The point is that a good investigation will not use other peoples' conclusions as its starting point: we must begin with the evidence.

Similarly, we should be careful about using terms that apply to concepts used today. This is one reason that we are talking about 'political realism' as

[48] Mourelatos, [1973]
[49] See, for example, Dyson [2005]; Waterfield, [2000] and Barnes [2000]. The latter organises his book according to the metaphor of the fall from paradise following intellectual curiosity.

opposed to '*realpolitik*': the latter carries too many connotations of the modern term. We should remember that we are investigating the origins of Classical Greek Political Realism, which is distinct from modern realism. Indeed, the political realism of thinkers from the same period differs a great deal, as we shall see in the case of Thrasymachus and Callicles, so there is no need to complicate matters further by assuming the existence of a set of abstract rules that apply to all forms of political realism at all times. This is the reason that, when considering the use of methodology in modern political realism, above, we treated the modern debate as an analogy, not as an absolute pattern of how political realism works. While parallels with the modern debate serve as useful illustrations, they are limited: it was still necessary for us to look to the evidence from Classical Greece to complete our point.

Likewise, we shall keep the use of jargon to a minimum. Jargon makes the discourse unnecessarily dense and can distort an argument when applied indiscriminately. The claim that '*x* is a subjectivist, and subjectivism cannot support metaphysical scepticism, therefore, *x* is not a metaphysical sceptic,' relies upon philosophical assumptions rather than historical evidence. However, as some jargon will be unavoidable, we should make clear what we mean by these terms. By 'relativism,' we simply mean the view that statements may only be deemed correct or incorrect by reference to a certain framework. When we use the term subjectivism, we mean the view that opposing claims are simultaneously true because substances instantiate opposing properties simultaneously (eg, the wind is both hot and cold). When we use the term 'private worlds,' we mean the view that opposing claims may be simultaneously true because they are not actually referring to the same thing (eg, there are separate winds for Socrates and Protagoras).[50]

Finally, the biggest problem when we are analysing an idea in itself is that of language: nothing translates exactly. For example, when considering the word λόγος, we are dealing with something that could mean 'word', 'account', 'story', 'proportion', 'reason', 'explanation', 'argument' or 'value,' to name just a few.[51] Even when we consider the context in which the word is used, we cannot find an English word to represent exactly what we need. For example, if we say that the earliest Pre-Socratics were trying to construct a λόγος, we mean something that has similar connotations to the words 'account', 'principle' and 'explanation' – but in

[50] See Fine [1994]
[51] Waterfield [2000]

fact, we do not mean any of those words: we mean λόγος. Moreover Democritus' ἄτομα are certainly nothing like the atoms of the natural sciences today. For this reason, we use the Greek word in our discussion of the theory.

Another kind of problem with language is the use of the verb εἶναι. As we shall see, εἶναι can be existential ('x exists'); veridical ('x is true'); predicative or copulative ('x is F,' with F being some property) or the 'is' of identity. Whereas English can express these things in different ways, Greek only has εἶναι. We need an understanding of this to see the significance of the shift from the copulative to the existential sense in *Euthydemus* 283b-d; or to understand *Parmenides* 132.

Furthermore, an understanding of the semantic difference between the aorist and imperfect tenses in Greek is vital to our analysis of *Euthydemus*, and an understanding of the Greek use of the conditional sentence is necessary for our account of the development of mathematical proofs and its relationship to the construction of moral theory. Consequently, the problem of language must be attended throughout our analysis, and we shall use the Greek word rather than the English one where appropriate.

b) Analysis of the Theory in Context

We have discussed how to escape our preconceptions when analysing a reconstruction in itself, and we have seen that a strict regard for context is needed. Let us now turn to the dangers of taking this regard for context too far. We need to see how our reconstructed account fits into the debate of the time, but we should be aware that each account is distinct within, as well as a part of, its own time.

When we are analysing the account in context, we need to be aware of the Fallacy of the Homogenous Past, which takes the form: 'Medieval Man believed in Alchemy; Chaucer was a medieval man; therefore, Chaucer believed in alchemy.'[52] To a large extent, we have already avoided this problem, because we have already decided that historical trends are not to be used as starting points in our inquiry. General statements like the first one, 'Medieval Man believed in alchemy' are appropriate only as conclusions drawn from particulars like the other two statements. We need to establish the truth of the particulars, before drawing the generalisation.

[52] Hirsch [1976]

This may seem obvious, but it is not uncommon among historians. For example, Jaeger appeals to a general Greek conception of action to explain Thucydides' transferral of ἱστορίη to politics:

> No Athenian ever believed that knowledge could exist for any other purpose than to lead to right action...[53]

Jaeger is using his general rule about the Greek conception of action to explain something about a particular thinker. This only works if that thinker can be independently shown to have subscribed to this conception: Jaeger needs to show that Thucydides himself believes that knowledge exists for the purpose of right action. If this is so, we may as well say that Thucydides forms his report based upon *Thucydides'* conception of action, and leave the general Greek conception out of it. This is much more theoretically economical, and avoids the Fallacy of the Homogenous Past. For this reason, we shall consider each thinker on an individual basis, except in the case of the Pythagoreans, where the nature of the evidence forbids it.

This is not to say that investigating the existence of general themes is useless – but the results of these investigations cannot be used to explain particular cases. Rousseau, for example, is untypical of Enlightenment thinkers in his distrust of technological progress. We would not wish to explain his conception of medicine, for example,[54] in terms of an Enlightenment conception, but it may be useful to compare Rousseau with other Enlightenment thinkers after having analysed his theory in itself.

The same can be said for the dangers of taking the link between two individual thinkers too seriously. For example, Gorgias is a student of Empedocles, and is said to subscribe to his theory of effluences,[55] which some have said means that we should not take the nihilism of *Περί Φύσεως* seriously.[56] However, we could say that Aristotle is a student of Plato, and Platonic suspicion of sense knowledge can be found in early Aristotle[57] – but that does not entitle us to dismiss Aristotle's

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[53] Jaeger [1939] p 385
[54] See, Rousseau, *Emile* [1969] p 22 for his distrust of medical advances.
[55] Plato, *Meno* 76c
[56] Eg Robinson [1973]
[57] Aristotle, *Select Fragments*: *On Ideas* Fragment 2

biological works. Not only must we allow for differences between teacher and disciple, we must also consider the development of ideas within each particular thinker.

Above all, we need to make a distinction between the general and the particular. This is intellectual history, not pure philosophy: we are not entitled to assume that our material is rational. As we have discussed, thinkers need not be consistent. Therefore, we cannot use general rules to arrive at conclusions about particulars that were not used to form that rule in the first place. Take these two statements about Gorgias' particular claims: (a) 'Gorgias believes in Empedocles' theory of effluences' and (b) 'Gorgias is not serious about *Περί Φύσεως*.' Statement (c) is about Gorgias' claims in general: (c) 'Gorgias does not believe that all accounts are as good as each other.' There is no independent evidence for statement (c) – it has been derived from statement (a) – and yet (c) is used as a basis for (b). The only way to justify this would be to find independent evidence for (c), preferably a statement from Gorgias. Even then, this would not exclude the possibility that Gorgias is inconsistent.

Our Methodology Applied

We are to investigate the origins of Classical Greek Political Realism. We are to use methodology as a framework within which to analyse this, concluding that it is not a necessary or historical consequence of moral relativism. Methodology is inextricably linked to epistemology: a thinker will set about finding information according to what he thinks is the nature of knowledge and the obstacles to attaining it. We wish to grant each thinker his own ontology, not to impose our own, so we need to consider what kind of epistemological concepts the thinkers encounter before forming their own methodologies. This means exploring the nature of the epistemological debate before the emergence of relativism or political realism. This will be the purpose of our first two Chapters.

In our first Chapter, we shall consider the emergence of epistemological optimism that arises from the conviction that the universe it rational – and, consequently, that knowledge about this may be accessible to us. In the first section, we shall see that the practical motivations for discovery are empowering to the extent that thinkers begin to try to form general rules about the world, using both

practical and abstract means to do this. Our next two sections will consider the two alternative approaches to knowledge that arise from this: the thought experiment and the physical experiment. We shall see that, from the inkling that knowledge about the workings of the universe is possible, grows a desire to formalise a method of attaining more knowledge.

Our second Chapter will chart the development of the thought experiment. We shall consider Zeno, Democritus and the Pythagoreans in terms of their use of opposing claims in the thought experiment. We shall end our second chapter with a reflection on the great conflict in epistemology: the best account of the physical world, atomism, seems to call for an epistemology that analyses the world in terms of discrete portions, whereas developments in mathematics point to the need for a continuous framework. Moreover, the discovery of incommensurables contributes to a growing pessimism about the existence of a perfect language with which to describe the world, and the ability of reason to explain the world.

Our third Chapter will consider the emergence of moral relativism. These thinkers relate the conclusions of thought experiments to a particular framework. We shall see that Protagoras responds to the debate by rejecting the use of frameworks inappropriate to the inquiry. The conflict described above convinces Protagoras that we cannot find out about the world by using a framework that does not describe it, and his development of the idea of the importance of the observer leads to his refutation of conventional morality. Gorgias' attention to the distinction between what *is*, what is known and what is communicable also shows a concern for recognising the appropriate framework for a given inquiry. Euthydemus and Dionysodorus, we shall see, represent the culmination of this: they submit only to the rules of language, a framework distinct from reality. We shall see that in all of these cases, the tendency is towards conservatism, not political realism.

Finally, our fourth Chapter will examine the rise of political realism. We shall examine Antiphon first, although he cannot be said to be a political realist in the strict sense: our reasons for doing this is that he represents a divergence from the approach of the thinkers discussed in Chapter Three. His method is more empirical, based upon building up a picture of the world from a starting point. We shall then consider the political realism of Thrasymachus and Callicles. We shall also examine Thucydides, who holds that historical interpretation should focus on the power relations between political entities.

We shall see that the methodology of these thinkers is very different from that of the relativists: they believe that there is a correct way to gain knowledge of the world: theory should be built up based upon observation. Far from continuing the early Sophists' epistemological relativism, the political realists try to salvage a methodology based upon observation. If their theories can be likened to anything, we must look to the faith placed in observation and analysis by Empedocles and Anaxagoras. Political realism is the application of this method to the world of politics.

This is Not the Truth

> To study history one must know in advance that one is attempting something fundamentally impossible, yet necessary and highly important. To study history means submitting to chaos and nevertheless retaining faith in order and meaning. It is a very serious task, young man, and possibly a tragic one.[58]

We have discussed the difficulties in forming a historical account and our proposed methods for overcoming these. We are, nevertheless, faced with the problem that what we are describing no longer exists: we cannot do experiments on the past, so we are left with the task of interpreting the evidence that has survived. The problem is that a historical interpretation is no more 'real' than the past it describes: we can never meet an interpretation in the physical world, just as we can never meet the number four. Protagoras would object that our interpretations do not exist independently of us, but we wish to say that the past does, so our framework is incompatible with our material; Gorgias would point to the ontological gap between our account and the reality. All we can do is select the method of interpretation most sensitive to our evidence.

This is not the truth: that title was chosen for a variety of reasons. The first was to highlight the practical problems with which the historian is faced, such as fragmented evidence and inaccurate preservation of the sources. We are, after all, encumbered by a Darwinian selection of the evidence, which leaves us with only what past generations have seen fit to preserve. As we have seen, this selection has

[58] Hesse [2000]

often been made on the basis of what those who preserve the fragments think will best support the case they are trying to make, not on the basis of the integrity or importance of the thinkers themselves.[59] Secondly, it is a play upon the title of Protagoras' book, *On Truth*: We are arguing that political realism does *not* arise from the denial of an absolute truth expressed in this work. Finally, what we wish to present is what we consider to be the most suitable framework within which to analyse the origins of political realism. This is more important than whatever conclusions we may produce. This is not the truth: it is the application of the most appropriate historical methodology to the evidence available.

[59] We recall particularly the use of earlier pagan philosophers by the early Christian thinkers to support Christian doctrine against their pagan contemporaries: Origen; Clement; St Augustine; Hippolytus.

Part One: The Epistemological Debate

Chapter One: The Emergence of Methodology

The purpose of our first two chapters is to examine the nature of the epistemological debate. This debate is concerned with the possibility of knowledge, asking what kind of knowledge can be attained, and how we should go about this. In Section One, we shall look at the Milesians' attempts to investigate the world, concluding that they begin to discover rationality in the universe that is discoverable by man. This readies the debate for a discussion of the methods by which we may discover that rationality. In Section Two, we shall examine the emergence of the thought experiment as such a method in the work of Xenophanes, Heraclitus and Parmenides. In Section Three, we shall consider an alternative to the thought experiment: the physical experiment, as developed by Anaxagoras and Empedocles.

Section One: There is Something to Know

Thales

Thales is associated with finding practical solutions to problems. There is a story that he enables an army to cross the Halys by diverting a part of it[60] and he is also said to have mapped out the stars of Ursa Minor, which the Phoenicians used to sail.[61] However, stories like this tell us little. Herodotus himself is sceptical of the first story – he thinks that there is an existing bridge before Thales comes. Diogenes Laertius is more inclined to believe the story; but he does not tell us upon what grounds he believes it,[62] so we are in no position to make a judgement ourselves. Moreover, if we disregard Herodotus' account on these grounds, we are left with no indication of how sophisticated Thales' methods are.

If we try to build a reconstruction for Thales based upon evidence like this, we shall merely end up with a collection of possible stories and a conclusion that 'we must be careful about taking this too seriously, because the evidence is

[60] Herodotus, *Histories* 1.75
[61] Callimachus, *Iambi* Fr 94
[62] Diogenes Laertius, *Lives* 1.38

unreliable.' True as that is, it is unhelpful because there is very little firm evidence for everything we wish to discuss here. If we wish to say anything at all, that kind of reconstruction is of little use. On the other hand, it is more damaging to build up an account based upon evidence that we do not trust, and then throw in the comment that some of the evidence is unreliable afterwards.

Our reconstruction should avoid the problem of going too far by making claims that rest upon dubious evidence, while also avoiding the problem of not going far enough by not providing any positive statements at all. We may do this by considering the least we can say about the evidence available, then considering how, and in what circumstances, we may say more. This approach is both more useful and less deceitful, but it does require the kind of evidence that gives us the scope to do this.

It is for this reason that we turn to Thales' application of mathematics to navigation. This way, we may reach some necessary conclusions about Thales' methodology, rather than having to play off the credence of one historian against another. Moreover, we may use Thales' approach to mathematics as a starting point for our investigation as a whole. Thales' wish to use the abstract framework of mathematics to discover things about the sensible world will serve as a useful point of comparison with attitudes towards the intelligible and the sensible at later stages in the debate.

Thales is attributed with the use of mathematics in problem solving, which he learns from the Egyptians.[63] The 'Eudemian Summary' in Proclus' *Commentary on Euclid Book One* tells us that Thales' geometry is both general (theoretical) and empirical (αἰσθητικώτερον).[64] One of Thales' theoretical proofs, claims the Summary, is his method of discerning how far away a ship was from the shore, which requires knowledge of certain properties of triangles. We are told that Thales uses the theorem later set out in Euclid I.26:

> If two triangles have the two angles equal to two angles respectively, and one side equal to one side, namely, either side adjoining the equal angles, or that subtending one of the equal angles, they will

[63] Waerden [1983]
[64] Eudemian Summary in Thomas [1939]

> also have the remaining sides equal to the remaining sides and the remaining angle to the remaining angle.[65]

This demonstrates that Thales is able to apply abstract concepts to the concrete world, and use general rules about them to discover particular information; a more systematic and economical method than trial and error.

Let us be clear about upon how far the Eudemian Summary is to be relied. The first thing to say is that the sentiment of the 'Eudemian Summary' cannot be considered to be totally Eudemus'. Eudemus precedes Euclid, so the summary cannot have been written by Eudemus as it stands, and perhaps not even by Proclus.[66] It is possible that Eudemus does attribute to Thales the use of that method, and the author of the summary merely cross references this theory with Euclid 1.26. In fact, Eudemus does make attributions to Thales: in his *History of Astronomy*, he says that Thales is the first to predict eclipses and to fix solstices.[67] There is the possibility that Eudemus is exaggerating,[68] which we shall assess shortly, but it is valuable contextual evidence to suggest that Eudemus does attribute the practical application of certain mathematical rules to Thales.

Proclus tells us that Eudemus attributes the theorem to Thales on the grounds that his method 'must have made use of it.'[69] Let us be clear about the claim that is being made. First of all, it is not claiming to know for certain that Thales proves this theorem: it is an inference from the method that Thales uses, based upon the mathematics that Eudemus feels was needed to devise it. Secondly, it is not clear that Thales needs the concept of proof that is found in Euclid: he may simply assume the truth of the rules about triangles that this embodies, without having to know how it is that they are true. Indeed, we may associate the kind of proofs that we find in the *Elements* with methods that arise out of later Eleatic philosophy, as we shall see in Chapter Two. The principle of the Eudemian Summary could hold true if Thales discovers, but does not prove, certain properties of triangles, because Thales need not know of the proof of the theorem to 'make use' of the properties it

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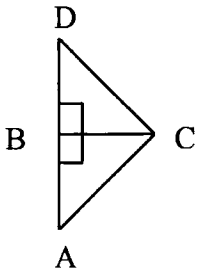
[65] Euclid, *Elements* I.26
[66] Heath [1960] Ch 4
[67] In Diogenes Laertius, *Lives* 1.24
[68] Thales was only interested in the practical application: see Waterfield [2000] p 4; Roller[1978] and Proclus' unreliability: Coolidge [1963]
[69] Eudemian Summary

describes. All that is being claimed is that Thales' method involves the use of these properties.

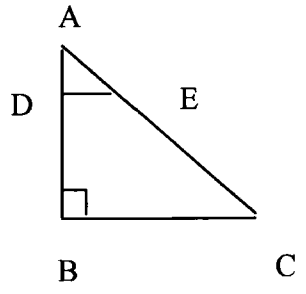
Let us now begin to reconstruct this method. The most likely method will have two attributes. Firstly, it should be mathematically sound. Secondly, it should be possible to carry out this method in practice: the reason that Thales is mentioned in the Summary is that he was successful in his calculations.

Given that we cannot, of course, use Pythagoras' theorem, the most geometrically straightforward method that Thales could have used is as follows:



Thales stands at B, the shore, and wishes to know the distance to the ship at D. He picks another point on the shore, C, and measures the distance BC and the angle BCD. He then measures an equal angle, BCA to create line CA, which intersects the extension of DB at point A. The distance AB is equal to BD.

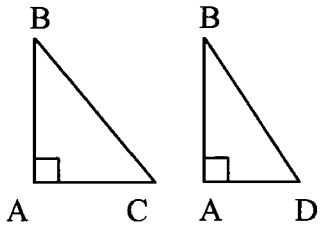
The problem with this is that it seems impractical as a method of calculating the distance of a ship from the shore: if the ship were very far out, Thales would need a large extent of level ground to measure AC and BA. Though it seems reasonable geometrically, the impracticality of this method means that we should reject it as an explanation.[70] We wish to find a solution that is practical, as well as being mathematically sound. Cantor proposes the following solution:



Thales stands on a tower at A with a right angle-shaped instrument. The small right angled triangle ADE has common angles to ABC, so the length of BC can be determined by DE by proportion. This does not require the use of much level ground.[71]

[70] For the same reason, Heath rejects Tannery's solution in his translation of the *Elements* Vol 1 [1956], and we may reject McKirahan's solution [1994] p 26
[71] Cantor, in Heath, *Elements* [1956] Vol 1 p 304

As Heath points out,[72] this effectively resorts to the use of similar triangles, as opposed to reconstructing the same triangle somewhere else and measuring it: if Thales had used this method, it is more likely that the Summary would have mentioned Euclid VI.4,[73] rather than I.26. For the sake of mathematical coherence and practical considerations, we have strayed rather far from our evidence.
Heath proposes the following solution:



Thales stands on the tower at B with a stick and cross-piece to fix an angle. He fixes the stick upright and directs the crosspiece at the ship. He fixes the crosspiece at this angle, ABC. He creates triangle ABD, where D is the point on the shore determined by angle ABD being the same as ABC .The distance AD=AC, the distance of the ship from the shore.[74]

This method has the advantage of requiring the kind of knowledge needed for Euclid I.26 – triangles ABC and ABD share two angles and a corresponding side – and it also means that Thales could choose where to construct the second triangle, if there were some obstructions. Heath also claims that the similarity to Thales' method of measuring the height of pyramids[75] is added evidence. This is questionable, because there is no evidence to suggest that Thales' practical solutions have anything mathematical in common: as far as we know, they are each constructed as distinct solutions to problems as they come along. Heath is presupposing a generality that he has no right to expect, especially considering that an alternative account of Thales' method is recorded by Plutarch,[76] which does involve knowledge of the use of proportions. In the context of Egyptian knowledge

[72] Ibid, p 394
[73] 'In equiangular triangles the sides about the equal angles are proportional, and those are corresponding sides which subtend the equal angles.' Euclid, *Elements* VI.4
[74] Heath, *Elements* [1956] Vol I, p 305
[75] Heath means the account given in Diogenes Laertius: 'by the shadow cast, taking the observation at the hour when our shadow is of the same length as ourselves.' *Lives* I.27
[76] Plutarch, *Dinner Party of the Seven Sages* 147: the method uses the rule that the height of the pyramid stands at the same ratio to the stick as the height of their respective shadows.

of proportions, it is quite conceivable that this is Thales' method.[77] Having said this, Heath's solution does provide a practical, mathematically workable method that fits our testimonia.

The least our reconstruction can claim is that Thales needs some knowledge of the properties of triangles, most likely assuming the truth of Euclid I.26, without necessarily having to prove it. Rather than having an abstract notion of proofs, he may take a more empirical approach: from what he sees of triangles, he generalises that all triangles with two angles and a corresponding side the same are equal, so the probability is that this was true for all triangles. This is the least that we can say. We may be justified in going further: given that Thales may not have the expanse of shoreline he needs, and given the evidence we have for his knowledge of proportions, it is possible that he uses similar triangles also. This requires twofold generality: firstly, the assumption that identical triangles share the same properties; secondly the claim that the same rules apply to triangles sharing proportional properties on different scales. There is no need for us to say that he proves either, which limits Eudemus' claim about the general/theoretical nature of Thales' mathematics.

This is as far as our reconstruction may safely go: contextual evidence suggests that, in fact, he does not prove these things – certainly not in our sense of the word. Egyptian geometry is concerned with practical calculations, but contains no proofs.[78] If Thales does 'prove' anything, he is doing something completely new.

The Summary's use of the idea of αἰσθητικώτερον proofs is more telling: it is most likely that he 'proves' that the diameter of a circle bisects it by folding the circle, for example.[79] This is unacceptable according to our ideas of proofs, and nothing like it appears in the *Elements*. Coolidge objects that this is unlikely because proofs by folding are unnatural in Greek geometry,[80] but this objection is illegitimate, as it is vulnerable to the charge of the Fallacy of the Homogenous Past.

Now let us analyse this reconstruction in terms of what this in itself tells us about Thales' methodology: we wish to know in what way and to what extent Thales is general and rational. We can see that Thales' discoveries are usually

[77] Florian Cajori [1909] p 17; Cf Rhind Papyrus pp 77-79: '...if the total number of proportionate shares was [sic] increased, that of each separate share would be increased in the same proportion.' p 79

[78] Silvester [2001] and Waerden, [1983]

[79] Eudemian Summary

[80] Coolidge, [1963] Ch 11

associated with some kind of practical application. This suggests that Thales is only interested in abstract concepts insofar as they explain the sensible world. We may suppose his main concern is the particular instantiation of abstract shapes: our most likely reconstruction shows him recreating the same triangle for measurement somewhere else. He may need to make generalisations about the shared properties of proportional triangles of different sizes for practical purposes, which illustrates a higher level of generalisation. The Summary also shows him to be interested in 'underlying principles.' However, we have no evidence to suggest that he investigates this for its own sake: he wishes to use it to make discoveries about the sensible world, and does so through a mixture of abstract reasoning and making physical measurements. For Thales, knowledge is focused firmly upon the sensible realm.

Let us now examine what this means in the context of the wider debate. We do not wish to do Thales a disservice by saying that he does not improve upon the practicality of the Egyptians; nor do we wish to attribute too much to him. Here, it may be useful to make a comparison with Pythagoras, in order to be able to judge Thales' methodology in context.

Both Thales and Pythagoras retain an aspect of μῦθος: they are both connected with the religious, even in terms of their mathematics. Thales wishes to link his explanations of the sensible world with more spiritual concepts like 'soul.'[81] Pythagoras is also linked with the religious: while in Egypt, he concerns himself with Egyptian temples, sacrifices and ceremonies, although this may be partly to gain the respect of the Egyptians.[82] The Pythagorean tradition also includes many rituals akin to religion.[83]

The difference between the two can be seen by considering the following example. Thales is described as drawing a right-angled triangle in a semi-circle in Apollo's temple[84] and sacrificing an ox after being the first to inscribe a right-angled triangle in a circle.[85] Others credit the latter story to Pythagoras, and

[81] Aristotle, *De Anima* 405a; Waterfield describes this as 'religious animism' [2000] although Barnes [2000] Ch 1 wishes to say that Thales means something more like a motivator than a soul
[82] Isocrates, *Bursiris* 28; Cf Iamblichus, *Life of Pythagoras* IV
[83] Herodotus, *Histories* 2.81
[84] Callimachus, *Iambi* – Callimachus says that Thales was drawing the figure Euphorbus devised, ie, the semi-circle containing the right angled triangle.
[85] Pamphila in Diogenes Laertius *Lives* I.24. It is likely that Pamphila means to say 'semi-circle', as above.

Diogenes Laertius reconciles the stories by saying that the discovery is attributed to Euphorbus, and Pythagoras (who claims to be a reincarnation of Euphorbus) develops its mathematical implications to a further extent.

In view of this, the most likely explanation is that Thales is famous for making practical use of the rule that a triangle with its corners in a semi-circle is right-angled, and Pythagoras investigates the mathematical implications for their own sake. This conforms with what we said of Thales – that he is interested in abstract entities as representations of the physical. Pythagoras, rather than seeing the abstract world as a means to understand the sensible, believes that the world of number *is* the real world: 'all things accord in number.'[86] Moreover, Pythagoras extends his mathematical apparatus to arithmetic, which he learns from the Babylonians.[87] Thus, Pythagoras has both the inclination and the intellectual means to carry the investigation further than Thales.

The real difference between the two can be found in the story told by Augustine. [88] Thales is known as one of the Seven Sages, and makes pronouncements upon grand themes like time, hope and beauty, but gives no critical examination of these.[89] Pythagoras says that it would be presumptuous to call himself a sage. He says he is a philosopher: he is a lover of wisdom for its own sake, not for the practical advantages it can bring.

Although Thales can be seen to retain elements of μῦθος, he makes an important step towards λόγος: we are not at the mercy of the whims of the gods if the universe is rational. A rational, ordered universe is a predictable one and once we discover this, we can begin to find out more about it. In this way, the truth of 'μῦθος to λόγος' is to be found in the belief that the universe is rational, rather than in the rationality of the thinkers themselves. Thales is attributed with the epigram, Γνῶθι σαυτόν, Know thyself.[90] This empowerment of the individual is associated with the capacity of man to explain the world around him. We are told that Thales uses astronomical calculation to predict eclipses. If this is true, it conforms with what we know of his use of mathematics:[91] Thales makes generalisations about

[86] Iamblichus, *Life of Pythagoras* XXIX
[87] Ibid IV
[88] Augustine, *The City of God Against the Pagans* VIII Ch 2
[89] Plutarch, *Dinner Party of the Seven Sages* 9 and Diogenes Laertius, *Lives* I.35
[90] Diogenes Laertius, *Lives* I.39
[91] Augustine, *The City of God Against the Pagans* VIII Ch 2

abstract entities to form rules. He combines these rules with known sensibles to predict the position or time of unknown sensibles or concrete events.

Anaximander

Anaximander is credited with the invention of the gnomon, using it to mark solstices and equinoxes, and constructed clocks to tell the time.[92] The mathematical use for this can be found in Euclid's *Elements* II.5, but there is no evidence to suggest that Anaximander takes any interest in its abstract application. Indeed, Herodotus credits the Babylonians for the invention of this,[93] so we may go no further than to conclude that Anaximander makes use of the device for practical purposes. What this does tell us is that Anaximenes shares Thales' wish to explain the world, and uses practical means to do it. His interest in marking the passage of time illustrates an appreciation of the need for a framework within which to understand the concrete world.

We see this in the evidence for his mapmaking. Although we have no direct evidence for the nature of Anaximander's map, we may speculate. We are told that he is the first to draw a map of the land and sea, and he constructed a globe.[94] Herodotus complains that the early mapmakers made the maps too symmetrical: Asia and Europe are shown to be the same size and the ocean is shown to be running around a perfectly circular earth.[95] Agathermerus and Waterfield think that we may be sure at once that Anaximander's map would have been of this sort,[96] a judgement which seems to commit the Fallacy of the Homogenous Past. We need stronger evidence to make this claim.

We do have evidence of Anaximander's faith in order that would support this claim independently. He says that existing things die back into their original sources

[92] Diogenes Laertius, *Lives* II.1
[93] Herodotus, *Histories* II.109
[94] Diogenes Laertius, *Lives* II.1; Cf Agathermerus and Strabo in Kirk, Raven and Schofield [1983] p 104
[95] Herodotus, *The Histories* IV.36 and IV.42
[96] Waterfield, [2000] p 4-5; Agathermerus in Kirk, Raven and Schofield [1983] p 104

> ...according to necessity; for they pay penalty and retribution to each other for their injustice according to the assessment of Time...[97]

The poetry of this suggests that it is based upon fancy, rather than scientific observation, but it shows that that Anaximander believes that the best way to explain the world is to appeal to the rules of symmetry and balance. He wishes to fill in the gaps in our sense data by appeal to an underlying symmetry.

Likewise, he thinks that the earth keeps its place because it is exactly in the centre of the universe: it cannot move in any direction because all directions are equally inappropriate.[98] Waterfield thinks that this is an example of an early preference for theory over the senses, 'for surely the senses would seem to confirm that nothing just hangs in place in mid-air.'[99] This may be what Waterfield makes of his sense-data, but it is far from obvious: the earth does seem to be stationary to those that live on it, and things like clouds do hang in mid-air, moving only because of the wind. If we are to credit Anaximander with the preference for theory over the senses, we should not use the criterion of what we think the senses tell us – we need evidence of *Anaximander's* mistrust of sense data, which we do not have.

In fact, a more theoretically simple explanation would be that, in Anaximander's experience of Thales' success, reference to an ordered world of the abstract explains the observations of the senses. As a result, he uses this idea of symmetry to predict information to which the senses have no access. This is why his maps are symmetrical, and why he thinks that the earth is in the centre – he uses the abstract to 'fill in the gaps' in our sense data. This account of Anaximander's methodology has the advantage of theoretical economy: it does not involve a critique of sense data for which we have no evidence.

Anaximander seeks a general principle to explain the world. This principle, the boundless ἄπειρον must be immortal and imperishable.[100] It is an equalising force: it ensures the balance of the universe. We saw that Thales formulates his rules based upon a survey of abstract entities (like the triangles), and uses them in conjunction with known sensibles to make predictions. Anaximander is too ambitious. He tries to formulate a more general rule (that there is an underlying symmetry in the

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[97] Simplicius in Kirk, Raven and Schofield [1983] p 118
[98] Aristotle, *On the Heavens* 295b11-16
[99] Waterfield, [2000] p 7
[100] Aristotle, *Physics* 203b

universe) without making a survey of the entities to which it applies. Thales' map of the stars is more of a success than Anaximander's map of the land and sea because Thales, having found no rule by which the positions of the stars could be predicted, plots only known sensibles. Anaximander produces his map upon the assumption that there is an underlying symmetry to which he should refer.

However, we have no evidence that he formulates this conclusion by the means of rejecting the evidence of the senses. Indeed, the fragment above suggests that it is a poetic assumption, based upon the optimism about order in the universe that we discussed. In spite of this, it does show is another break from μῦθος: if the underlying rational order is there, we only need to refer to it to make our predictions. For Anaximander, the appeal to underlying sense of order is a supplement to sense-data, but we cannot conclude that he intends it to be a replacement.

Anaximenes

We have little evidence of Anaximenes' methodology, but we can see that he also seeks to explain the world around him. The faith in the predictability of the universe we discussed soon leads to the idea that everything can be explained, and we can begin to find causes for things.

The doxographical tradition does not remark upon this being a new property of Anaximenes'. Thales has been said to call water the first principle,[101] or the cause,[102] or even the universal primary substance.[103] Anaximander's ἄπειρον has been called his cause.[104] Anaximenes, too, is credited with saying that the earth and heavenly bodies are held up by air[105] and that air is the cause of all things.[106]

However, it is difficult to judge what is meant by this, especially as so many different kinds of examples are given. For example, Aristotle says that, for Anaximenes, the flatness of the earth is the 'cause' of its being held up by the air beneath it.[107] Of course, Aristotle would wish to distinguish between different kinds of cause, but we cannot impose this system on Anaximenes. It could be that we

[101] Augustine, *The City of God Against the Pagans* VIII Ch 2
[102] Aristotle, *Metaphysics* 983b6-32
[103] Diogenes Laertius, *Lives* II.27
[104] Aristotle, *Physics* 203b and Hippolytus, *The Refutation of all Heresies* IV
[105] Aristotle, *On the Heavens* 294b14-22 and Hippolytus, *The Refutation of all Heresies* VI
[106] Augustine, *The City of God Against the Pagans* VIII Ch 2
[107] Aristotle, *On the Heavens* 294b14-22

make too much of the idea that the Milesians are 'monists' in this sense. For example, Thales does not explain everything in terms of water,[108] and Anaximenes does not believe that everything is made of air.[109]

What is interesting for us is the way that Anaximenes is constructing his explanations. Augustine has the clue. He says that, for Anaximenes, the gods are created from air.[110] This is another step away from μῦθος towards λόγος': it stabilises the rationality of the universe, giving us a greater ability to construct causal explanations. If even the gods are subject to the laws of cause and effect, they cannot be setting the rules of the universe in the first place. This is a far cry from the dependence of previous thinkers upon the mercy of the gods. For example, Homer credits the gods with deciding the extent of our capabilities, attributing to them the power to intervene in our lives.[111]

The rationality of the universe is established. Thales has given us the ability to make our own predictions about the world. Anaximander takes this faith in the order of the universe too far, but he carries on the tradition. With Anaximenes' demotion of the gods, he excludes the possibility of their interference in the laws that govern our universe. The sensible world is ours to explore.

Section Two: Reason Itself and the Emergence of the Thought Experiment

We have seen the reference to the abstract world of mathematics used successfully in making discoveries about the physical world, giving rise to a growing faith in the rationality of the universe. Until now, abstract concepts have largely been seen only in terms of representations of physical things, and explored as a means to find out about those things. The desire to explain and discover more about the world leads to the next step in the epistemological debate: the detachment of the rational from the sensible, with the rational beginning to take on a life of its own. It is in this way that the Thought Experiment is devised and developed.

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[108] See our discussion of his theory of soul, above.
[109] Hippolytus, *The Refutation of all Heresies* VI – things are made of fire and air holds them up
[110] Augustine, *The City of God Against the Pagans* VIII Ch 2
[111] Eg *Iliad* XX: Aineias tells Achilles that power in war is a gift from Zeus, who gives it in the measure he thinks best; Cf XXI: Apollo hides Agenor in a mist and sweeps him off to safety; Cf XXII: Hector escapes from Achilles through Apollo's renewal of his strength and speed.

Xenophanes

Xenophanes begins to see the problems of knowledge. He is primarily concerned with knowledge of the gods, doubting the certainty of such knowledge. Unlike earlier thinkers like Homer, Xenophanes stresses the gods' inaccessibility rather than their presence; he stresses the likely otherness of divinity rather than its humanity. He extends this epistemological doubt to 'what I declare about all things'[112]:

> No man has seen what is clear nor ever will any man know it.
> Nay, for e'en should he chance to affirm what is really existent,
> He himself knoweth not; for all is swayed by opining.[113]

Sextus believes that Xenophanes is rejecting absolute truth: he thinks that Xenophanes is saying that the criterion of truth is the opinionative.[114] However, Sextus, in his eagerness to credit everyone with a 'criterion,' fails to recognise the distinction between truth and knowledge here: Xenophanes is not rejecting the idea that there is a truth about reality, only our ability to know it. Xenophanes believes that there is such a thing as truth:

> Yet the gods have not revealed all things to men from the beginning;
> but by seeking men find out better in time.[115]

Xenophanes' main contribution to the debate is that our observations based on experience are insufficient to attain knowledge: just because we wear clothes, and have voice and shape, we have no right to extend that assumption to the gods, of which we have no experience.[116] In fact, making generalisations based upon our experience can lead to grave distortions – as Xenophanes points out, horses would probably say that gods look like horses, if they were asked.[117] The properties of the

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[112] Sextus Empiricus, *Against the Logicians* I.49
[113] Ibid I.49
[114] Ibid I.110
[115] Stobaeus in Kirk, Raven and Schofield [1983] p 179
[116] Clement, *Miscellanies* XIV
[117] Ibid XIV. In fact, this is representative of Xenophanes' wider critique of conventional religion. He objects that Homer and Hesiod make the gods too human [Sextus Empiricus *Against the Physicists* I.193]. Certainly, Hesiod's systematic classification of the gods in *Theogony* is symptomatic of the

observer – his position, his experience and his preconceptions – predispose him to take a particular view of the world that may not necessarily be the whole truth.

Xenophanes uses a thought experiment, in the form of a conditional sentence, to formulate this conclusion. He asks what claims we would make about the world if we had less experience, and finds that that they would be different to the claims that we make now.

> If god had not made yellow honey, men would consider figs far sweeter.[118]

Given this, and given the fact that our experience is finite, the claims we make about the world now must also be flawed. We have not tasted the sweetest thing or the bitterest thing possible, so our judgements about figs and honey are distorted by this; likewise, we have not experienced every kind of being there is – because we only know human form, we are biased in our judgements about what God must be like.

There are three things to be noted here. First of all, Xenophanes is not proposing the kind of relativism that we shall encounter in Chapter Three: he is not saying that there is no truth about the sweetness of figs, only that we are not in a position to know it. We must not let our anticipation of what later thinkers propose affect our interpretation. All we can say with certainty is that Xenophanes is concerned about our ability to judge the extent to which a substance has a particular property. It is a purely epistemological claim.

In fact, Xenophanes believes that we can increase the accuracy of our statements about the world by gaining more experience of it.[119] However, this brings us onto our second observation: it is the gods who may choose to reveal things to us. We are not totally in control of the accumulation of knowledge.

The third point is that Xenophanes makes a distinction between two states of mind: having knowledge and having opinions. There are also distinctions within the

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trend of rationalising the universe: the present order is accounted for, a genealogy is given and the origins of names are explained (for the latter, see lines 64-96; 191-255). However, Hesiod remains a pluralist, which is a large part of Xenophanes' criticism, and Hesiod's gods retain the capacity to interfere at will in human affairs – see *Works and Days*, especially, for this. Xenophanes' wish to build his account *a priori*, rather than upon established doctrine or everyday experience, is an acknowledgement of the capacity of man's rational faculties.

[118] Herodian in Kirk, Raven and Schofield [1983] p 179

[119] Sextus Empiricus, *Against the Physicists* II.314: Xenophanes speculates about the origin of man.

state of opinion. Xenophanes seems to suggest that learning is empirical: the gods gradually *build up* a picture for us. Therefore, a 'better' statement will be one that is closer to the truth.[120]

We see in Xenophanes, then, an awareness of the problems of epistemology. These problems must be resolved before we can begin to make claims. Knowledge, or the closest approximation to it, is accumulated by empirical means. However, we should take into account the properties of the observer before making an empirical survey, as we need to have an understanding of the limits of our evidence. This amounts to a discussion of the reasoning process in itself, rather than simply the use of reasoning to explain the physical world. Here, he introduces the thought experiment. Finally, Xenophanes does not give complete power to the human mind in the epistemological quest: it is up to us to remove the obstacles put up by our own preconceptions, but the true extent of our empirical survey relies upon divine revelation.

Heraclitus

Heraclitus shares with Xenophanes a wish to identify different levels of knowledge. He says,

> A man has the reputation of being a fool before a god, just as a child before a man.[121]

Like Xenophanes, he also pays attention to the properties of the observer in his epistemology. He notes that seawater is drinkable to fish but not to men,[122] and that animals' preferences are very different to those of humans.[123]

In a similar way to Xenophanes, Heraclitus thinks that our judgements about the world are limited by our experience of the world. However, all we were justified in saying about Xenophanes was that we cannot make an accurate judgement because we have not experienced everything there is to experience. We shall see

[120] Plutarch, *Table Talk* 746b
[121] Origen, *Contra Celsum* VI.12
[122] Hippolytus, *Refutation of all Heresies* IX
[123] Aristotle, *Nicomachean Ethics* 1176a 5-8

that Heraclitus' epistemology is more complex. He believes that experience is useless without understanding.

By this stage, the epistemological debate has become detailed enough to leave evidence of the thinkers criticising each others' approaches to knowledge. Heraclitus says:

> Much learning does not teach understanding; else would it have taught Hesiod and Pythagoras, or, again, Xenophanes and Hecateus...this one thing is wisdom, to understand thought, as that which guides all the world everywhere.[124]

Understanding plays a vital role in Heraclitus' methodology. He develops his epistemology in two ways: he includes an assessment of sense-data in his epistemology, and he formulates a methodology by combining this with his analysis of reason. Only this way may we attain understanding. On the basis of this, he draws conclusions about the nature of reality.

First of all, Heraclitus recognises that there are two processes involved in gaining knowledge: reason and sensation. He recognises the role of the senses in our understanding of the world, and uses a thought experiment to assess this:

> Heraclitus ...declared that if all existing things were turned to smoke, the nose would be the organ to discern them with.[125]

Heraclitus gives the thought experiment of Xenophanes a different focus: rather than asking what our judgements of the world would be like if our experiences were different, he is asking, 'if the world were different, how would we experience it?' Unlike Xenophanes, he begins from the assumption that there is a world for us to experience. This at once implies epistemological optimism about the suitability of the senses to tell us things about the world, but also a denial of their sovereignty. On the one hand, the senses are capable of discerning things about the world: our noses can tell us the difference between one thing and another. On the other hand, discernment is not the same as understanding, so reliance on the senses alone can give us a distorted world view:

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[124] Diogenes Laertius, *Lives* IX.1; Cf VIII.1.6
[125] Aristotle, *Sense and Sensibilia* 443a 23-24

> Ill witnesses for men are eyes and ears when they have barbarous souls.[126]

Sextus, in whose book this fragment is preserved, thinks that this shows Heraclitus to hold that man has two ways of gaining knowledge: reason and the senses. He also thinks that Heraclitus is rejecting sensation as a means to knowledge, and saying that reason is the criterion. Again, we should remember that Sextus is concerned with finding the 'criterion' for everyone and this has distorted his account of the theorists. There is nothing in the fragment Sextus gives us to suggest that Heraclitus is rejecting the evidence of sensation – the previous fragment even suggests that he thinks that sense data does have a role to play in the attainment of knowledge.

However, Heraclitus does mistrust sense data on its own. He sees that the world around us is constantly changing:

> Everything gives way and nothing stands fast...you cannot step into the same river twice.[127]

Therefore, any observations we make based upon the evidence of our senses are out of date as soon as they are made. We do not have the evidence to show exactly how this is linked to Heraclitus' criticism of sense data, but the most theoretically simple explanation is to follow the implications of this. If the world changes as soon as we make an observation of it, we have no means of making general claims about the nature of things. We cannot say, for example, 'this river is cold every winter,' because the water that we feel one season will have moved from that spot by the same time next year. Flux is an observation about the world that Heraclitus builds into his epistemology. Because of the way the world is, we must see the evidence of our senses as raw data – not strictly erroneous, but only useful when subject to rational analysis.

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[126] Sextus Empiricus, *Against the Logicians* I.126
[127] Plato, *Cratylus* 402a. Cf Plutarch, *Of the Word EI Engraven Over the Gate of Apollo's Temple at Delphi* 18

For Heraclitus, sense perception has a role, albeit a limited role, to play in learning, because his epistemology is built upon the assumption that there exists a physical world to which the senses have access:

> Whatever things are objects of vision, hearing [and] intelligence, these I pre-eminently honour.[128]

It seems that Sextus makes two mistakes. Firstly, Sextus makes Heraclitus' claim stronger than it should be: Heraclitus' warning, that the senses are bad witnesses for men with barbarous souls, is an expression of the unreliability of sense data by itself, but this does not mean that he is rejecting it completely. In fact, we may speculate that Heraclitus' doctrine of flux is based upon his observations of change in nature. Secondly, the imposition of Sextus' own framework upon Heraclitus leads him to believe that each thinker must have 'a criterion': because Heraclitus criticises pure reliance on the senses, Sextus assumes that (common) reason must be his criterion.

In fact, Heraclitus' epistemology is more subtle than this. Sensation is a means of discerning things in the world, but reason is needed to make sense of this. Rather than proposing 'one criterion,' Heraclitus makes separate analyses of the processes of reason and sensation as a means to knowledge.

Let us now consider the implications of his analysis of reason. We saw that Heraclitus shares with Xenophanes the wish to qualify statements about the world with a reference to the observer who makes them. As with our analysis of Xenophanes, we should be aware of the dangers of labelling this account as 'relativism' in anticipation of the thinkers that follow. Indeed, we have evidence to suggest that Heraclitus does believe that there is a common λόγος to be known, and that men who pay no attention to it are not properly awake:

> Of this Reason men are without comprehension, both before they have heard of it and when they have heard of it for the first time...One must follow the comprehensive and though reason is

[128] Hippolytus, *The Refutation of All Heresies* IV

> comprehensive most people live as though they possess a private intelligence of their own.[129]

The claim that reality seems different to each observer does not, then, lead to the conclusion that we live in our own 'private worlds.' There is a common reality to which any attempt to attain knowledge must refer. However, the fact that it is possible to make opposing claims about a thing does tell us something of its nature. A man on the top of a hill can point to the road down, but a man at the bottom would say that the road goes up: 'The way up [and the way] down are the same.'[130]

The idea of opposites naturally occurring together is not alien to Greek literature. Indeed, Homer often expresses an idea by breaking it down into the two opposing parts which compose it. For example, he says 'water or the boundless earth' to mean 'everywhere';[131] 'the other gods and all the fighting men' to mean 'everyone else.'[132] Heraclitus' philosophy is the systematic exposition of this idea that entities are naturally composed of these opposing parts.

Given this, the true nature of reality must allow both opposing claims to be true: opposites must exist in the λόγος'. Heraclitus is a subjectivist, for he believes that reality contains the properties necessary for opposing claims to be true. For Heraclitus, it is the role of opposites to maintain unity:

> People do not understand how what is diverse [nevertheless] coincides with itself, just like the inverse harmony of a bow and lyre.[133]

This is consistent with the doctrine of flux: change is constant. The world is always changing, yet the very fact that is changing remains the same: this tension of opposites maintains the unity of the λόγος. Likewise, the tension of opposites has epistemological implications: it means that some things are mutually known. Once we know that this is the road *up*, we also know that it is simultaneously the road *down*.

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[129] Sextus Empiricus, *Against the Logicians* I.32-33. Cf Clement, *Miscellanies,* XIV
[130] Hippolytus, *The Refutation of All Heresies* V
[131] Homer, *Iliad* XXIV.341
[132] Ibid II.1
[133] Hippolytus, *The Refutation of All Heresies* IV

Here, it seems necessary to point out that this is not an aspect of Heraclitus' doctrine that his later followers seem to maintain. Later Hercliteanism focuses more on the impossibility of knowledge resulting from the doctrine of flux: certainty is fixed; and fixedness is the enemy of flux.[134] However, this is not a reason to doubt our interpretation of Heraclitus: these later followers cannot agree amongst themselves,[135] and we must not assume that they are an accurate representation of Heraclitus himself. They have taken the most remarkable and new conclusion of Heraclitus' inquiry – the doctrine of flux – and drawn implications based upon that, out of context of his wider theory. As we have seen, whatever Heraclitus' views upon certainty, he need not reject fixedness. Heraclitus' view of opposites indicates that the doctrine of flux within the context of his subjectivism automatically requires the existence of fixedness. In order for the statement, 'the world is always changing' to be true, there must be both constancy and change.

Heraclitus makes an epistemological analysis of the role of the senses and the effect of the properties of the observer on the attainment of knowledge. He combines this with his metaphysical doctrines of flux and the tension of opposites to create his final methodology. The senses alone are not able to tell us about the world (because of the doctrine of flux), so we need to subject them to rational analysis. However, we know that our judgements can be obscured by the properties that are particular to us, so this must be taken into account.

Our evidence of Heraclitus' attention to his own position comes from Plutarch. He cites Heraclitus,

> 'I have been seeking myself.'[136]

This is an ambiguous phrase, but we can make sense of it if we look at the context in which it appears. Plutarch is criticising Colotes, an Epicurean whose work has not survived, for being inconsistent in his praise and blame. Colotes has criticised Socrates for inquiring into the nature of man, but praised Heraclitus for the sentiment quoted above. Colotes' point had been that there is no point in making inquires into the nature of virtue. In this light, it is conceivable that Plutarch misses

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[134] Plato, *Theaetetus* 180a-b
[135] Ibid 180c
[136] Plutarch, *Against Colotes* 20

the distinction that Colotes sees: Socrates is interested in the nature of man and its connection with virtue; Heraclitus' concern was to use self knowledge to find the λόγος. In this context, we may speculate that the reason Heraclitus thinks that a god's knowledge is better than a man's is because a god has more means to overcome the problem of his own position. It is also worth noting that this exhibits a very different kind of self knowledge from Thales' Γνῶθι σαυτόν: Heraclitus goes further than Thales by using self-knowledge as an epistemological tool.

Once the position of the observer has been identified, it must be negated by the rule of opposites in order to reveal the truth. This often means that the results of an inquiry are very different to those that the raw data of the senses might suggest, but it is better that way: 'an obscure harmony is preferable to an obvious one.'[137] We may come to the conclusion that this is the road *up* because we happen to be standing at the bottom of the road. By using the rule of opposites, we may work out our position in relation to absolute reality, and thus attain the λόγος, which is common to all. If this is the road *up*, the rule of opposites dictates that it must also be the road *down*. It is the same road, wherever we happen to be.

This implies a belief that an absolute truth that exists independently of the observer. Knowledge of it is attained by acknowledging and then cancelling out those relational properties that distort our view of reality. The belief that opposites can exist simultaneously is central to Heraclitus. It also implies that some things must be known simultaneously: the fact that this is the road up means that we at once know that it is the road down. This is a marked contrast to Xenophanes' preference for the empirical method, reflecting Heraclitus' criticism of Xenophanes reliance upon 'much learning' (πολυμαθίη). Note also that the evidence we have for Heraclitus shows his focus to be upon opposing properties of substances, not doubt about the existence of substances themselves. There is no doubt about the existence of the road, whether it goes up or down; seawater exists whether it is drinkable or not. The world can be seen in many different ways, but there is no doubt that there is a world to be seen.

In Heraclitus, we find the world of the rational detached form that of the sensible. Each is analysed separately, epistemological issues are identified, and a methodology is formed that uses both reason and the senses. Heraclitus places

[137] Hippolytus, *The Refutation of All Heresies IV*

power in the hands of the individual to attain knowledge: the λόγος is there, but in order to attain it, we must be prepared to challenge the views that come most easily to us. Finally, we see a continuation of the use of the thought experiment: we may find out the truth by the use of opposing statements.

Parmenides

Heraclitus and Parmenides are often seen as opposites. The doctrine of singularity, 'All is one,'[138] and the doctrine of flux are the most remarkable conclusions of Parmenides and Heraclitus respectively, so the instinct is to make analyses in those terms. The result is that comparisons of Heraclitus and Parmenides tend to highlight the differences between the two thinkers. We must draw a distinction between an analysis of the issues arising from Parmenides' and Heraclitus' conclusions, and a reconstruction of their theories as a whole.

For example, Plato identifies Heraclitus' doctrine of flux and the changeless 'All' of Parmenides and Melissus as opposites.[139] In order not to get caught between these two camps, he decides to investigate the issues separately, in *Theaetetus* and *Sophist* respectively. However, we would not say that *Theaetetus* contains a complete discussion of Heraclitus. In fact, Socrates is explicit about the fact that this is the discussion of an issue,[140] not a historical reconstruction of Heraclitus' doctrine.[141]

In contrast, our focus is to reconstruct accounts of Heraclitus' and Parmenides' methodologies. Their conclusions and the issues that arise from this are inevitably involved, but not as our starting point. As a consequence, we shall see that the difference between Parmenides and Heraclitus has been exaggerated by this focus on flux/singularity: the most important difference for our purposes is in the role of opposites in their respective methodologies.

Parmenides[142] is less inclined to grant the existence of opposites. He says,

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[138] Plato, *Parmenides* 128a
[139] Plato, *Theaetetus* 180e
[140] Ibid 182a
[141] Ibid 182c
[142] We shall focus upon the evidence from Plato's *Parmenides* for Parmenides' methodology. Although we possess fragments of a poem written by Parmenides, these are more useful for evidence of his conclusions than his methodology. In the same way that a historian of science would look to Erasmus Darwin's *Zoonomia* rather than *The Botanic Garden* to explain his theories, it makes more

> Never shall it force itself on us, that that which is not may be;
> Keep your thought far away from this path of searching.[143]

The first thing to say is that Parmenides' words have immediately broadened the scope of the debate about opposites. While we saw that Heraclitus is concerned with opposing properties, there is no distinction in Parmenides between the veridical, existential, or predicative sense of εἶναι. By implication, there is the same probability of finding something that both exists and does not exist, or a statement that is true and not true, as there is of finding something that has and does not have a particular property.

On its own, this evidence we have for Parmenides suggests that he thinks that the same rule applies to properties and substances: two opposing claims that refer to the same thing cannot both be true. We will qualify this by looking at it in context presently, but if it is correct, the difference from Heraclitus is at once apparent. We do not have any evidence that Heraclitus thinks that substances can both exist and not exist, but we certainly know that he thinks that the same thing can possess opposing properties. In fact, his use of opposites in his methodology is based upon the idea that opposing claims must be simultaneously true.

Parmenides also sees a sharper divide between the reasoning process and that of the senses. If it is not logical for something to be and not be, we must not let our sense observations interfere with our analysis of this. Parmenides implies that our thoughts must be of something, and of something that *is*.[144] However, once we identify this, we immediately need to see how this coincides with the methodology that Plato reconstructs for us in *Parmenides*:

> ...do not investigate the results of a hypothesis if each hypothesized thing *is*, but also hypothesize that this same thing *is* not.[145]

Parmenides then agrees to demonstrate this method for Socrates, investigating firstly the results that must follow if 'one is' (137c-160b), then

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sense here to explore Parmenides in terms of the records of his intellectual γυμνασίας, rather than his poetry.

[143] Plato, *Sophist* 258d 1-2; Cf 327a 8-9

[144] Plato, *Parmenides,* 132b-c. Cf Clement, *Miscellanies* II

[145] Plato, *Parmenides* 136a

secondly the results that must follow if 'one is not' (160b-165e), with the conclusion:

> If one *is* not, nothing *is*...whether one *is* or is not, both it and the different things, both in relation to themselves and in relation to each other, all, in all ways, both *are* and *are* not and both appear and do not appear.[146]

How are we to reconcile this with Parmenides' earlier claim that it is impossible to think what is not, and his disapproval of opposing claims? We are told not to let 'that what is not may be' be forced upon us, and even if we are to investigate opposing claims, we must have to think about both of them. This must entail us thinking what is not.

We may understand this better by considering the nature of *Parmenides.* It is a demonstration of the training that the mind must undergo to attain the truth, not a description of what the truth is.[147] The purpose is to generate a discussion, which will form an understanding of the issues involved.[148] Parmenides is not asking us to accept the simultaneous truth of opposing claims, as Heraclitus does: he is asking us to gain an awareness of the implications of each claim, and how it fits into the context of the debate.

We are asked to hypothesise. The way that Parmenides uses a hypothesis, ὑποθέσις, is not the same as the way that scientists today use them. For Parmenides, a ὑποθέσις is not a proposition of what might be true, to be tested. It is, rather, a thought experiment, intellectual γυμνασίας: it asks, *if* something were true, what conclusions would follow? This kind of ὑποθέσις is used by Parmenides to investigate opposing claims, which often results in an either/or choice between the two. The Hippocratic treaty *On Medicine* grumbles that this excludes the possibility of more detailed explanations, as there could be more than one set of opposing principles involved:

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[146] Ibid 166c
[147] Ibid 166c
[148] Plato, *Sophist* 217c

> I am utterly at a loss to know how those who prefer these hypothetical arguments and reduce science to a simple matter of postulates ever cure anyone on the basis of their assumptions.[149]

This complaint is aimed at thinkers like Parmenides, who does, in fact, base his analyses upon the use of opposing principles, such as hot/cold; one *is/is not*.[150] His reference to the function of hot and cold tells us that Parmenides is not denying the coexistence of opposites in the sensible world, at least.[151]

What Parmenides actually means is that, although we may use opposing concepts in our training, we must not allow the assumption of their existence to be forced upon us, as Heraclitus' method entails. His use of ὑποθέσις allows him to employ opposing principles in his thought experiments, without committing to the existence of both.

For Parmenides, then, when we investigate the ὑποθέσις that one *is not*, we do not think what is not. If the truth is, 'either one *is*, or one *is not*,' then each ὑποθέσις can be seen as the investigation of half a truth. When we investigate the ὑποθέσις 'one *is not*,' we do not think, 'one is not.' Non-being cannot be the subject of discourse.[152] We think, 'if one *were not*, what must follow?'

This is the difference between Heraclitus and Parmenides. Heraclitus' methodology relies upon the assumption that opposites must simultaneously be true. Parmenides uses opposing concepts as part of a thought experiment to gain a greater understanding of the issues involved in the debate, but we are by no means committed to accepting that both are true. As in the case of Heraclitus, Parmenides' method could be analysed as an adaptation of a long-standing theme in Greek literature. We saw that Heraclitus' subjectivism is similar to the Homeric expression of entities as compounds of opposing parts. Parmenides' prohibition of the simultaneous existence of opposites is a radical systemisation of the Homeric technique of phrasing a question in terms of opposing pairs. For example, Menelaus asks Telemachus if he is in Lacedaemon for 'a public or a private matter';[153] a giant is asked, 'is someone threatening death to yourself by craft or by violence?'[154] In

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[149] Ps-Hippocrates, *The Science of Medicine* p 79
[150] See Theophrastus, *On the Senses* I.3
[151] Plutarch also notes this in *Against Colotes*.
[152] Proclus, *Commentary on the Timaeus of Plato* 1,345
[153] Homer, *Odyssey* IV.314
[154] Ibid IX.406

Homer, the respondent may choose to answer in terms of the opposites in the question (as in the latter case) or in his own terms (as in the former).[155] For Parmenides, however, these opposites form the parameters of the debate.

Once we have completed this training, how are we to use it to formulate our conclusions? Like many of Plato's dialogues, *Parmenides* does not end with a firm conclusion, but leaves us feeling that there is much more to be discussed.[156] Parmenides' illustration of his method does not give us a complete account of how he arrives at his conclusion 'All is one' in his poems, because, as we noted, the dialogue is illustrating the training that the mind must undergo to attain truth, not a description of truth itself. Moreover, we have seen that, elsewhere, Parmenides does allow for the existence of opposites.

At first glance, it looks as though Parmenides separates reason completely from the sensible world. His doctrine of singularity is a result of rational investigation and he believes that sensible investigation results in the conclusion of plurality.[157] Choosing reason over sense-data, he transfers the conclusions of his rational methodology to the world of the senses.[158] What Parmenides is actually doing is prescribing a strict pattern for rational thought that involves an awareness of the implications of each possibility. This method leaves little room for sense-data: if Parmenides could write a computer programme to run through each opposing ὑποθέσις, it would be able to function with minimal data input. Parmenides' method is an extreme isolation and development of the pure thought experiment.

In Plato's *Parmenides*, then, we see that Parmenides makes use of two emerging traditions in the epistemological debate: the thought experiment and the juxtaposition of two opposing claims within that framework. As we discovered, ὑποθέσις is the starting point for intellectual γυμνασίας: we ask, 'if x is, what must follow?' Then, 'if x is not, what must follow?' Parmenides develops this idea into a systematic methodology for inquiry. This type of method is common to several

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[155] See Lloyd [1966]

[156] Likewise, Plato leaves the investigation into the nature of virtue unfinished in *Meno*, to be continued in the *Republic*; *Sophist* continues the discussion of *Theaetetus*.

[157] Aristotle, *Metaphysics* 1009a

[158] Aristotle, *On the Heavens* 986b19-24. Having said this, this does not explain how Parmenides' rational methodology does result in singularity: *Parmenides* 166c is far from conclusive in this respect. Equal respect is paid to the negation of the One, and appearance is spoken of on a parallel to being. If appearance can be equated with the sensible world, this would explain how Parmenides justifies this transferral, but it still does not tell us how the conclusion of singularity is reached in the first place. Because this paper is primarily concerned with methodology, it is beyond our scope to undertake such a project.

thinkers, and will play an important part in assessing political theorists' response to the epistemological debate in the fifth century.

Section Three: The Actual World, Physical Observation and the Physical Experiment

As we have seen, even if Parmenides does try to export the thought experiment to apply to the sensibles, he considers a limited selection of sense-data: a wider selection of evidence is needed for a successful physical theory. Recall that the failure of Anaximander's map can be attributed to the lack of data from the actual world, and the success of Thales is due to his use of physical observations as well as his use of the abstract. In our next section, we see the revival of the empiricism of Xenophanes. In the same way that we may manipulate concepts by means of the thought experiment, we may manipulate the physical world, and supplement our findings with observations. We shall examine the attempts of Anaxagoras and Empedocles to manipulate the physical world to attain knowledge.[159]

Anaxagoras and Empedocles are called pluralists, because they think that the contents of the world were separated out of an original mixture by (an) animate motive force(s). These forces have been likened to abstract principles,[160] but this is highly misleading, as there is no doubt that they are corporeal. We shall examine the methodology that leads to this conclusion, remarking that this methodology marks the partial rescue of sense-data from the criticisms of previous thinkers and the true beginning of Greek natural science. This leads to the development of physical observation and the physical experiment (to rival the thought experiment) as a methodological tool. This reference to the physical world allows us to explain the development of Anaxagoras' and Empedocles' theories.

[159] That is not to say that these are the first thinkers to use the physical experiment: we hear of an experiment in Herodotus: Psammetichus brings up two infants in isolation: their first word supposed to indicate which is the oldest race on earth (*Histories* II.2). However, this is vastly imprecise in comparison to the repetition of conditions on a larger scale that we shall see in the pluralists.
[160] Kirk, Raven and Schofield [1983] p 364

Anaxagoras

Anaxagoras acknowledges that raw sense-data cannot provide a complete account of the world. We cannot see gradual changes in colours, for example, so 'owing to their [the senses'] infirmity we are unable to judge what is true.'[161] This, we shall see, is similar to Democritus' assessment of the limitations of sense-data when the subject has become too small. However, while Democritus supplements his sense-evidence by deploying the purely intellectual method of contradiction, Anaxagoras' response is to appeal to more evidence from the natural world.

Anaxagoras performs experiments upon a scale large enough to be visible to the senses, in order to support his claims about the minute. For example, in order to support his argument that void does not exist, he needs to say that air consists of something. He inflates a wineskin with air, and tortures it to demonstrate that the air offers resistance. He encloses air inside a water-thief to show that the air assists in moving the water, in the style of a pipette.[162] Anaxagoras does strive to improve upon the limitations of sense-data, then, but he does so by appealing to the actuality of the physical world on a larger scale, not, like Democritus, by appealing to the abstract (ie, the ὑποθέσις to be proved wrong).

This consideration helps to explain the development of Anaxagoras' theory of motion. Given that his experimental evidence points to the fact that void does not exist, Anaxagoras needs to explain motion in a way that is not disproved by experiment. In the light of his experimental evidence, he needs to explain how things can move if there is no empty space. To do so, he proposes the existence of νοῦς, or Mind, as the initial cause of motion. After the initial movement, mechanical factors begin to take over and νοῦς becomes less important.[163] Notice that νοῦς is not the kind of entity upon which it is possible to conduct physical experimentation. This is not satisfactory by today's standards, because it flaunts the principle of falsifiability,[164] but we should remember that the natural sciences are in their infancy

[161] Sextus Empiricus, *Against the Logicians* I.90

[162] Aristotle, *Physics* 213a22-213b. In *On Melisus, Xenophanes and Gorgias* 976b19, Aristotle implies that Anaxagoras' 'experiments' are more like demonstrations than true investigations, but we should remember that Aristotle means to discredit him, and treats Anaxagoras' evidence with less respect than it deserves. See Bostock's introduction to Aristotle's *Physics* in Waterfield's translation [1999].

[163] Simplicius, *Physics,* in Kirk, Raven and Schofield [1983] p 364

[164] See Dyson [2005]: it is conceivable that the failure of Presocratic science can be attributed to the absence of the principle of falsifiability, as described by Popper [1980] p 41: '...it must be possible

in Anaxagoras' time. It has yet to be established that a statement that is disprovable, yet that remains disproved, is preferable to a statement that is not disprovable at all.

Empedocles

Empedocles is another natural scientist.[165] He also believes that intelligence can overcome the limitations of sense-data.[166] Like Anaxagoras, he engages in observations of the physical world rather than the use of thought experiments, although these do seem to be more like observations than experiments. In the same way as Anaxagoras, Empedocles is convinced that there is no such thing as void and uses these observations of the physical world to prove it. He refers to the operation of a clepsydra, which, like Anaxagoras' water-thief, lifts quantities of water out of the river using trapped air.[167]

Like Anaxagoras, Empedocles must now explain motion in a world which does not include void. He says that there are two forces that act upon the mixture that constitutes reality: Love, which divides and Strife, which combines.[168] Again, this solution proposes corporeal motive forces to explain motion. Because the agents are corporeal, this explanation accounts for the fact that they are expected to act upon the physical world; and because there exists no experiment to rule out their existence, Empedocles has the confidence to build them into his theory.

These theories are by no means scientific by our standards; the very fact that Anaxagoras' and Empedocles' motive agents are not falsifiable by experiment rules this out immediately. We must also stress that we use the term, 'experiment' very loosely: Anaxagoras' and Empedocles' activities are primitive in comparison to the experiments of today's natural sciences. However, they are early attempts to manipulate or observe the physical world in order to learn about it, and mark the beginnings of the physical experiment as opposed to the thought experiment as a

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for an empirical scientific system to be refuted by experience.' Therefore, the fact that there is no way to disprove the existence of entities such as νοῦς, Love and Strife could be seen as a bonus by their respective proponents; it is even likely, if they are willing to leave their theories unproven for the sake of their being unrefuted (or physically unrefutable).

[165] Aristotle, *Poetics* 1447b17-20: account of Empedocles as a natural scientist rather than a poet.

[166] Section on Gorgias; Cf Sextus Empiricus, *Against the Logicians* I.125

[167] Aristotle, *On Youth, Old Age, Life and Death and Respiration* 473a15. Other observations/experiments of Empedocles include the investigation of what the modern scientist would call centrifugal force with water in a cup, to develop theories about the motion of the heavens. See Aristotle, *On the Heavens* 295a15-22.

[168] Aristotle, *Metaphysics* 985a

methodological tool. It is with these qualifications that we may call Anaxagoras and Empedocles natural scientists.

Recall also that, in our section on Thales, we noted that it is conceivable that Thales' method of measuring the distance of a ship from the shore makes use of the notion of similitude; certainly, if Plutarch is to be believed, his method of measuring the height of Pyramids uses this notion; and it is certainly present in Egyptian calculations. We also noted that Thales makes generalisations about geometric shapes in order to make his calculations. We see the natural scientists applying a similar methodology to the physical world. Experiments or observations are analysed according to the idea that the same general principles apply to phenomena that are on a different scale, but proportionate. This empiricism exhibits the kind of faith in the rationality of the universe with which we began our chapter. Unlike the Parmenidean model, which we noted requires minimal data input, this method becomes more accurate with the accumulation of sense-evidence. This is the difference between metaphysics and natural science: while metaphysics allows us to explore our conceptual scheme, the natural sciences have the capacity to explain the physical world.

The use of the methodological approach to explain the development of Anaxagoras' and Empedocles' theories illustrates the merits of a focus upon methodology. The most common way to discuss thinkers like Anaxagoras and Empedocles is to say that each wishes to respond to the Eleatic challenge. This is also common in the discussion of atomism. [169] However, as we saw in the Introduction, scholarship that focuses only upon conclusions of theories to trace intellectual history lacks explanatory power. While it may be correct that the theories of the atomists and pluralists do amount to a refutation of Eleatic unity, this cannot explain how Democritus' and Anaxagoras' refutations of the Eleatics result in such different theories. However, when we considered Anaxagoras' and Empedocles' preference for the physical experiment or observation, we saw that this leads them towards pluralism. In Chapter Two, we shall see that Democritus prefers

[169] Barnes [2000] talks of these thinkers as part of the 'Paradise Regained' as opposed to 'the Serpent' of the Eleatic challenge; Waterfield [2000] p 121: 'Parmenides had forbidden the generation of plurality out of singularity, so Anaxagoras generated plurality out of plurality.'; Kirk, Raven and Schofield [1983] p 378: 'But for all their (pluralism's and atomism's) ingenuity, and for all the difference between them, they are each the outcome as much of the Eleatic paradox as of the inventiveness of their respective authors.' Also Kirk, Raven and Schofield [1983] p 283: Empedocles is seen as an emulator of Parmenides.

the thought experiment to supplement the limitations of sense data, which can explain how this might result in atomism.

From the Milesians' initial investigations, which involve the use of both the practical and the abstract, we see the rise of two different methodologies: the thought experiment and the physical experiment. While the physical experiment must always begin from what actually *is* in the physical world, the thought experiment is a kind of intellectual γυμνασίας. It is pure conceptual analysis, allowing us to begin from any premises we like, regardless of their verity. Perhaps this is the true value of metaphysics. It cannot tell us anything about the actual world, as physics can, but it does tell us about the necessity of certain truths and their place in our conceptual scheme. If the world contains *x*, it must exclude *y*; if subsequently, we find that *x* and *y* do exist simultaneously, then metaphysics asks, what must we change in our conceptual scheme to account for this? In our next Chapter, we shall trace the development of the thought experiment that occurs alongside the emergence of the physical experiment: we see the use of opposites applied in different contexts. This development provides the epistemological background for the emergence of moral relativism, which we discuss in Chapter Three.

Chapter Two: Opposing Claims

In this Chapter, we shall consider Zeno's paradoxes of motion as the application of the thought experiment to explore the nature of physical phenomena. We shall consider Democritus' use of the thought experiment to supplement the failings of the senses and our position in the physical world in the epistemological quest. Finally, we shall consider the Pythagoreans' application of the thought experiment to the field of mathematics, which they believe to be a perfect representation of the physical world. This culminates in the crisis that readies the debate for the emergence of relativism.

Zeno

We shall begin with Zeno and the paradoxes of motion, which are so famous that some academics wish to abandon the debate altogether, claiming that it would be 'tedious and useless' to review them:

> We need only to direct our attention to their general assumptions in the form in which the arguments have been handed down to us.[170]

However, aside from the fact that such an attitude of 'everybody knows' should never be permitted in academic debate, an excellent case has been made by Booth for the claim that Zeno's arguments do not follow the pattern of opposing contradicting claims,[171] which not only follows our rule of giving precedence to textual evidence over philosophical symmetry, but also neatly challenges our most relevant point about Zeno. This is disastrous for us because we wish to examine Zeno's role of opposing claims in the thought experiment. Therefore, rather than relegate the matter to obscurity, it is a demand of intellectual honesty that we refute this. Our first task, therefore, will be to establish the existence of such a pattern in Zeno's original arguments.

Zeno's role in the *Parmenides* suggests that he follows his lover and teacher Parmenides' lead in his methodology by taking two opposing claims and

[170] Heidel [1940] p 22
[171] Booth, [1957]

investigating the results as though each were true. When Socrates questions him about the purpose of his writing, he says that it was written, not simply to support Parmenides, but rather to contradict those who sought to attack him. Zeno presents the case that the inquiry is incomplete without prosecuting both the ὑποθέσις, 'If one *is*' and the ὑποθέσις, 'If many *is*.'[172] This is a similar point to Parmenides' when he instructs Socrates to investigate opposing ὑποθέσις in his γυμνασίας.[173]

However, Zeno's most famous arguments, the paradoxes on motion, are not presented to us by Aristotle as following this pattern, and it is his evidence upon which we are forced to primarily rely. As Booth points out, the most common reasons for doubting Aristotle's evidence are the dogmatic pronouncement that Zeno must have been more intelligent (than to make the mistake in the Stadium paradox that Aristotle attributes to him) and the assertion that the arguments follow a certain pattern, and that this in itself is evidence enough to doubt Aristotle. Booth rejects the first argument on the grounds that, at a time when such rules as d=st had not been formulated, the flaw in the Stadium paradox is no indication of Zeno's stupidity. We may also reject it, upon the grounds that claims about a thinker's intelligence should derive from a reconstruction of their arguments, not *vice versa.*

Booth believes that we have no reason to doubt that Aristotle is an accurate historian, which is an incredible claim to make, given the evidence to the contrary.[174] However, his point is a valid one: if we wish to contradict textual evidence, we need a strong reason to do so. Booth says that the pattern theory should be coherent, but, in our methodology, we rejected philosophical coherence as a primary tool in this stage of historical reconstruction. It was decided that attention should be paid to the epistemological priorities of the thinker in question, rather than assuming ultimate allegiance to our standards of coherence. Therefore, not only do we need convincing evidence of a pattern, but we also need independent evidence that Zeno subscribes to it. An additional problem is that there is some confusion about what Aristotle is asking us to believe about Zeno, and what he is presenting as his own opinions. Our first task, then, should be to consider how far Aristotle's account of Zeno's paradoxes of motion leaves room for a pattern interpretation without contradicting

[172] Plato, *Parmenides* 128c-e
[173] Ibid 136a
[174] In fact, with the possible exception of Diogenes of Oenoanda, Aristotle is the most problematic source for this paper. While we must concede that it is difficult to assess Aristotle's accuracy without full Presocratic evidence, the problem is that Aristotle is writing as a philosopher, not a doxographer. See Cherniss [1964].

the *Physics*. We should then assess the credibility of a pattern interpretation, in the light of other evidence.

Let us firstly consider Aristotle's account of Zeno's paradoxes of motion, of which there are four: the Dichotomy, Achilles, the Arrow and the Stadium. Aristotle deals with these in three places in his *Physics*, and proposes different solutions to them. In order to reconstruct the paradoxes, we should consider the context in which Aristotle recounts them.

Aristotle's first refutation of Zeno's Dichotomy takes place at 232a23-233b32. Aristotle has been arguing that space and time are continuous, and a continuum must be indivisible. He says of time, 'Time is the number of movement; the now is equivalent to the moving object and is, as it were, a unit of number.'[175] For Aristotle, the now is like a point in mathematical lines. It divides time potentially and holds it together – '...it makes past and future time a continuous whole.'[176] Thus, Aristotle describes time as the enabler of motion before he mentions Zeno. We are to understand that this is Aristotle's claim, not Zeno's.

Having come to this conclusion, Aristotle decides that, because both time and magnitude are liable to the same divisions, both must be infinite. Aristotle introduces Zeno by saying,

> That is why Zeno's argument makes a false assumption, that it is impossible to traverse what is infinite or make contact with infinitely many things one by one in a finite time.[177]

He explains that there is a difference between saying that a continuum is infinite in extent and saying that it is infinitely divisible. Because it is possible to have a finite distance that is infinitely divisible, it must be possible to move along it, because the time that it takes can also be infinitely divided, yet finite in extent.

Note that, rather than stating Zeno's argument as a subject for discussion in itself, Aristotle has introduced it to illustrate the implications of *his* argument. In fact, in his explanation of why distance and time are continuous, he has explained why they cannot be discrete, but he has not explicitly stated the problems of continuity. It is unclear whether the 'false assumption' Aristotle mentions is

[175] Aristotle, *Physics* 220a1-3
[176] Ibid 222a10-11
[177] Ibid 233a21-23

explicitly built into Zeno's original argument, or whether it is something that Aristotle feels that Zeno needs to implicitly assume for the argument to work. This alone is reason to doubt the accuracy of Aristotle's first account of Zeno's argument, but he gives us another reason when he restates it differently in the second instance:

> ...the one about a moving object not moving because of its having to reach the half way point before it reaches the end.[178]

This is very different to Aristotle's first account of Zeno's Dichotomy because it makes no mention of time, whereas his first account implied that Zeno was saying that motion is impossible *in a finite amount of time*. In order for Aristotle's first statement to be appropriate to Zeno's paradox, Aristotle needs Zeno to have linked time to motion in the same way that Aristotle has. Zeno must also have confused the ideas of infinite divisibility and infinite extent.

However, Aristotle's second statement of the Dichotomy does not include these assumptions. All Zeno needs to say is that, if space is continuous, it must be divisible into an infinite number of magnitudes. Therefore, for an object to move along a line, it must traverse an infinite *number* of distances, even though the line is not infinite in extent. This is impossible, not because the object has a finite amount of time in which to do this, but because it involves the completion of an infinite number of tasks. As an infinite series has no end, it is impossible to complete it. In this way, even given an infinite amount of time, it is impossible to cover any distance *at all*, because even the half way point and the quarter way point and so on are divisible *ad infinitum*.[179]

In order to make this claim, Zeno does not need to deny that motion (if it occurs at all) occurs in time. However, it does mean that he rejects Aristotle's view of time as *enabling* motion. We may conceive of a dot moving along a line, drawn onto a page in two dimensions. While it may take time for us to imagine the dot moving, from the point of view of the dot, time is irrelevant. Physically, we must have time for movement, whereas conceptually, it is possible to imagine movement outside a time frame. Aristotle's conception of time does not allow him to do this.[180]

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[178] Ibid 239b12-13

[179] This is a similar argument to the mistake that Simplicius records: Zeno thinks that the sum of an infinite number of parts is itself infinite. See Kirk and Raven, [1983].

[180] Aristotle, *Physics* 221a9-18

We see that Aristotle's first refutation of Zeno is, in fact, not entirely appropriate, as Zeno has not accepted his view of time. Even if he does accept this, all Zeno needs to do is point out that, by his argument as restated by Aristotle at 239b12-13, it is impossible for time to pass at all. Zeno does not need to deny that the same rules apply to a time continuum as to a space continuum; he merely needs to deny that such a symmetry enables motion to occur, which is Aristotles' point at 233a21-23. Therefore, Zeno's argument is that traversing a continuum requires completing an infinite number of tasks, which is impossible.

Aristotle's third account of the Dichotomy occurs at 263a. Here, he says,

> ...the question was whether it is possible to traverse or count infinitely many things in a finite time.[181]

This seems to support his account at 233a21-23, as it brings time back into the problem. However, as we have seen, it is conceivable that Zeno's argument is not that it is impossible to traverse infinitely many things in a finite time, but that it is impossible to traverse infinitely many things at all. Zeno is concerned with the impossibility of motion,[182] but it is Aristotle, not Zeno, who grants the enabling role to time in this problem. In this third instance, Aristotle again does not make it clear exactly how much of the above quotation belongs to Zeno: 'the question' might either refer to Zeno's question or to the 'false assumption' that Aristotle believes is implicit in the Dichotomy, because of *Aristotle's* view of motion and time.

It is likely that Zeno does not share Aristotle's view. Booth points out that we need to understand Zeno in relation to his own times, so we should remember that formulations such as d=st had yet to be made.[183] Far from being conclusive in favour of Aristotle's account, this only serves to highlight the fact that this exercise requires us to eliminate the equations of Newtonian mechanics from our analysis. Booth says that this makes it more likely that Zeno should have made the mistake attributed to him by Aristotle, but we should ask whether it also indicates that Zeno does not make the connection between time and motion that Aristotle is subscribing to: 'time is the number of movement.' [184] In this case, we may reject Aristotle's

[181] Ibid 263a16-17
[182] Ibid 239b9
[183] Booth [1957] p 188
[184] Aristotle, *Physics* 220a1

accounts at 233a21-23 and 263a16-17, in favour of his account at 239b12-13. Zeno is talking about the impossibility of moving along a continuum, not the impossibility of covering an infinite distance in a finite time.

Aristotle goes on to outline his theory of actual and potential divisions: he says that there is a sense in which it is possible to traverse infinitely many parts and there is a sense in which it is not:

> If they exist actually, it is impossible, but if they exist potentially, it is possible.[185]

He means that, while we may make an infinite number of conceptual divisions in the path of the runner, these are never actualised. The runner does not actually have to complete an infinite number of tasks. This, says Aristotle, is the correct response to the facts of the matter.

Aristotle says that the Achilles paradox is the same as the Dichotomy 'with the difference that the remaining magnitude is not divided in half,'[186] and 'includes the extra feature that not even...the fastest thing in the world can succeed in its pursuit of the slowest.'[187] The fastest runner will have to reach the point where the slowest started, by which time, the slowest will have moved on. Aristotle's solution is the same as for the dichotomy: 'it is still caught if Zeno grants that a moving object can traverse a finite distance.'[188] This supports our conclusion that Zeno is concerned with the impossibility of motion due if space is continuous: it is the fact that distance is infinitely divisible that prevents the faster runner from catching the slower. Our rejection of the accounts at 233a21-23 and 263a16-17 was correct: this is Aristotle's response to what he believes Zeno must implicitly assume, not what he explicitly states. The role of time as an enabler of motion is part of Aristotle's solution to Zeno's problem, not central to the statement of the paradox itself.

The third paradox is the Arrow. It claims that a moving arrow is still, because:

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[185] Ibid 263b6-7
[186] Ibid 239b19
[187] Ibid 239b24
[188] Ibid 239b28

> ..a thing is at rest when it is opposite to something equal to itself, and if a moving object is always in the now, then a moving arrow is motionless.[189]

Aristotle says that the conclusion depends on assuming that time is composed of nows, and because this assumption is (according to Aristotle) erroneous, the argument fails. Again, this account is ambiguous, as Aristotle has used both temporal and spatial terms. Zeno could say that, if an object is at rest when it is opposite something equal to itself, then a moving arrow is motionless. The arrow is always opposite something equal to itself: the collection of parts of discrete space that it occupies. At any point at which we choose to measure it, we will find it opposite to a section of space equal to itself. If space is discrete, we must visualise the arrow's path as jumping instantaneously from discrete points along its journey, but we will never 'catch it out' in the act of moving.

Aristotle's inclusion of the term 'now' is especially confusing. As we have observed, it is a view particular to Aristotle that uses the now to unify the past and the present: when Aristotle defines the term, he laments other's misuse of it.[190] Given this, it would be surprising if Zeno had used the term as Aristotle did: evidently, he used it in some other way or not at all. Aristotle has already forbidden motion in discrete space. In his declaration that space is continuous, he says that, in the discrete model, there would be no movement, but discrete changes of place:

> For X was in motion over ABC as a whole and was also at rest in each of A, B and C and so it will be possible for a thing to be continually at rest and moving at the same time.[191]

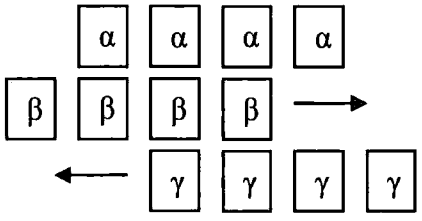
Therefore, if Zeno's Arrow is an argument against discrete space, there is no need for Aristotle to refute that aspect of it: he may concentrate on correcting Zeno's use of the term 'now.' It makes sense to say that the Arrow refutes the possibility of motion if space and time are made up of discrete parts. The assumption it makes is that what can be said of the parts must also be said of the whole. At any point in the arrow's flight, there is no difference between the moving

[189] Ibid 239b5-7
[190] Ibid 222a20-222b6
[191] Ibid 232a13-16

arrow and an arrow at rest in the same position. The arrow's flight is made up of such discrete snapshots, in all of which the arrow is effectively at rest. Therefore, the whole of the arrow's flight is composed of resting parts, so we must ascribe rest to the whole.

The fourth paradox is the Stadium. Aristotle says that the fallacy of this paradox is that Zeno mistakenly believes that 'it takes the same time for one moving body to move past a body in motion as it does for another to move past a body at rest, where both are the same size as each other and are moving at the same speed.'[192] This is the paradox as stated by Aristotle:

1)

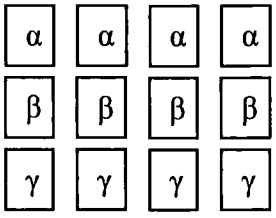


According to Aristotle, Zeno's Stadium paradox is that, by the time the alphas, betas and gammas are opposite each other, the first beta will have passed all the gammas but only half the alphas. Zeno concludes that the first gamma spends the same amount of time alongside each beta as it does each alpha, because both gammas and betas spend the same amount of time passing the alphas so 'half a given time is equal to double that time.'[193] As Aristotle points out, the fallacy is that Zeno has failed to take into account the fact that the betas and gammas are moving in opposite directions, so it takes less time for them to pass each other as it does for each to pass the alphas. This is how Aristotle reconstructs the Stadium.

However, let us consider the implications of this for a discrete theory. We shall imagine that each unit alpha, beta, gamma is equal to the minimal unit possible. This is the next step:

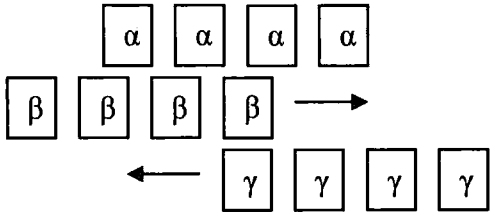
[192] Ibid 239b
[193] Ibid 239b37

2)



In a theory of continuous space, there are infinitely many steps in between these, one of which includes the first beta and the first gamma being directly opposite each other, but not opposite an alpha (in fact, exactly half way between two alphas):

1a)



In the diagram above, the first beta and the first gamma occupy a space that is equal to half the second alpha plus half the third alpha, which is impossible according to the discrete theory, as there is no such thing as half a minimum possible unit. According to this model, motion must occur via a series of instantaneous leaps from one part of discrete space to another.

As there is (in a theory of discrete space) no point at which 1a occurs, in making the leap from step two to step three, the first beta will have passed one alpha and two gammas in the same amount of time – an instant. Whether or not we credit Zeno with the mistake that Aristotle mentions, that this makes half the amount of time equal to double the amount of time, we see a clear parallel with the Arrow paradox - in the Stadium, there is no way to 'catch the blocks out' in the act of moving if space is discrete. In the same way that the Achilles paradox seems to be a version of the Dichotomy where both components are moving, the Stadium attempts to recreate the problem of the Arrow with two moving components.

The paradoxes now follow a certain pattern. Zeno, in discussing the possibility of motion, would ask what are the implications for motion in a continuous framework (Dichotomy and Achilles); then, conversely, in a discrete one (Arrow and Stadium). Conditionality is implied by the structure of the paradoxes. Moreover, the first paradoxes for the continuous and discrete models (Dichotomy and Arrow respectively) involve an object moving against a stationary framework. The second paradoxes (Achilles and Stadium respectively) involve objects moving relative to *other moving objects*. This observation will play an extremely important role when we come to discuss the correlation between Zeno's paradoxes and the Pythagorean Quadrivium.

To support this conclusion, the changes made to Aristotle's account are twofold. Firstly, we granted a more marginal role to time in Zeno's paradoxes than Aristotle does. In the Dichotomy, we have concluded that Zeno's justification for the impossibility of motion is that there are an infinite number of tasks for the runner to complete, not that there is a finite amount of time in which to do it. Indeed, this is neither a great nor unjustifiable change to make, given the fact that Aristotle's three accounts of the Dichotomy are contradictory in that respect, and that he declares Achilles to be basically the same as the Dichotomy. Moreover, we have seen that Aristotle proposes his own particular view of space, time and motion, which must be removed from Zeno's account.

The only other change we made was to introduce the idea that Zeno's use of 'nows' and the moving blocks were to represent discrete parts of space and time – the idea that they are the minimum conceivable. We have already noted the likelihood that the 'nows' are discrete parts for Zeno. As far as the Stadium is concerned, it is arguable that this is also what Aristotle means to say, since the word ὄγκοι can either mean 'minimum conceivable' or 'mass.'[194] As we saw, Aristotle has no need to draw our attention to this aspect of Arrow and Stadium, as he is in agreement with Zeno in refuting the discrete framework. That is our textual evidence from Aristotle and the changes we would have to make to arrive at the conclusion that there is symmetry in Zeno's arguments. Both changes are minimal and justifiable.

[194] See Ross, [1960] 656

We may supply Booth with the criteria he says we need to secure the argument: a good reason to doubt Aristotle, and a convincing pattern. Firstly, Aristotle has given us many reasons to doubt his accuracy upon this matter. His inconsistency has already been discussed. We must also consider his lack of clarity about whether the 'real' solution to Zeno means the solution that answers the question as Zeno phrased it or as it should have been phrased, and whether he thinks that the fallacy of the Dichotomy relies on an implicit or explicit assumption. Moreover, we must remember that Aristotle has already dismissed the possibility of discrete space before he came to discuss Zeno, so he would not have wished to refute Zeno on those grounds when he came to the Arrow and the Stadium. Moreover, we have produced a convincing pattern with good reason. Booth says that we have no reason to treat the four paradoxes as a set, but, in fact, Aristotle does present them as such.[195] We have produced a pattern that evades many of the claims that Booth attributed to other pattern proponents.[196]

This is enough to answer Booth, but we have agreed that this is not enough by our standards: we should look for independent evidence of Zeno's epistemological priorities to show that he did subscribe to this methodology. We find this in Plato's *Parmenides*, in which Zeno is presented as being interested in the results of opposing claims. Not only is he an accessory in Parmenides' γυμνασίας, but we also hear of his eagerness to investigate opposing claims as a means of discovery. When his lover Parmenides is attacked for the ὑποθέσις, 'One is' Zeno refutes the asserters of the many by attacking 'if many is.'[197] Moreover, Zeno is often identified with Palamedes of Elea from Plato's *Phaedrus*, who

> ...employs an art of speaking which makes his hearers think that the same objects are both like and unlike, both one and many, both at rest and in motion...[198]

This would support the case for Zeno's methodology of playing out the results of opposing claims. Zeno can be seen to use this methodology to investigate

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[195] Aristotle, *Physics* 239b9-10
[196] Eg, Booth, [1957] p 195, objects to Lee on the grounds that he has included time as infinitely divisible for the first two paradoxes.
[197] Plato, *Parmenides* 128
[198] Plato, *Phaedrus* 261

physical phenomena such as time, space and motion. Only now may we begin to analyse Zeno's role in the wider debate.

Democritus

Democritus appreciates the epistemological pessimism of some of his contemporaries and predecessors:

> Now verily that we do not comprehend what the nature of each thing is or is not, has been oft-times made plain...man must learn by rule that he is divorced from verity.[199]

We shall see how Democritus builds his methodology upon two epistemological problems (the limitations of the senses and the position of the observer) and the principle that genuine knowledge, unlike perceptual knowledge, cannot include contradictory claims. Next, we shall attend to Aristotle's account of Democritus. We shall resolve the apparent contradiction within Aristotle's evidence, and between Aristotle and other writers, by referring to the distinction made by Democritus between the conventional and the actual. We shall go on to note that this method of reconstructing theories produces a more sophisticated account than Makin's method produces, especially in the light of Democritus' philosophy. Finally, we shall show how Democritus' methodology leads to, and explains, his theory of ἄτομα.

For Democritus, the epistemological quest is impeded by two factors. The first is that the senses are not subtle enough to distinguish the things that are the cause of our 'seemings': ἄτομα.[200] The second is that the position of the observer must be taken into account in the quest for knowledge. Democritus discovers the first problem when he trains himself to test his sense evidence, through solitude and frequenting tombs. [201] His subsequent exasperation with sense-evidence (the 'bastard' kind of knowledge) leads to his call for greater use of other kinds of investigation:

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[199] Sextus Empiricus, *Against the Logicians* I.136-7
[200] Philoponus, *On Aristotle's Coming-to-be and Perishing* 1.1-5, 17
[201] Diogenes Leartius, *Lives* IX 38-40

> Whenever the bastard kind is unable any longer to see what has become too small, or to hear, or smell, or taste or perceive it by touch (one must recourse to) another and finer (instrument).[202]

'What has become too small' includes ἄτομα, which for Democritus constitute the universe, along with empty space. Our senses may detect bitterness, heat, cold and colour, but they cannot detect the truth that lies behind them. Sensible objects do not exist in the conventional interpretation: all that exists is ἄτομα and the void.[203]

Democritus also recognises that the position of the observer must be taken into account when making calculations about the world. This is continually remarked upon in the ancient sources. Philoponus reports Democritus saying that even if the atoms change position, they seem to stay the same, if they are the same in relation to us.[204] Aristotle reports that Democritus and Leucippus think that the same thing has contrary appearances to different observers, due to changes in the compound. For example, we may compose a number of different words from the same collection of letters.[205] This is an additional incentive for Democritus to prefer abstract reasoning, rather than physical experimentation.

Democritus sees these epistemological problems, but the fact that he produces many writings, including *Περὶ τῶν διαφερόντων ῥυσμῶν* (Of the Different Shapes [of Atoms]), suggests confidence that he has found a way to overcome this. Democritus is interested in mathematics, having written such treaties as *Περὶ ἀλόγων γραμμῶν καὶ ναστῶν α′ β′* (On Irrational Lines and Solids, two books).[206] Democritus inquires whether, when a cone is divided by a plane parallel with its base, are the 'superfices' (surfaces) of its segments equal or unequal? He finds the answer by means of a thought experiment comparing the results of two opposing claims: If the surface is unequal, this would render the cone uneven, 'receiving many step-like incisions and roughnesses.' However, if they are equal, 'the cone will seem to have the same qualities as the cylinder...which is the most absurd.'[207]

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[202] Sextus Empiricus, *Against the Logicians* I 139
[203] Diogenes Leartius, *Lives* IX 44
[204] Philoponus, *On Aristotle's Coming-to-be and Perishing* 1.1-5, 17
[205] Aristotle, *De Generatione et Corruptione* 315b8-12
[206] Diogenes Leartius, *Lives* IX 47-48
[207] Plutarch, *Of Common Conceptions Against the Stoics* 39

This, in addition to being one of the earliest examples of the indefinitely small in mathematics, illustrates Democritus' solution to the problem of sense data. The surfaces cannot be both equal and unequal, but they must be one of these, so whichever ὑποθέσις produces the least absurd results must be the solution. The cone does not seem to us to be uneven, but Democritus does not approve of sense data, especially when it comes to the very small. The alternative is conceptually incoherent, so Democritus concludes in favour of unequal surfaces.

Democritus could hold the latter to be more absurd for a number of reasons. He may say that it begs the question, because he was enquiring about a cone, and to turn this into a cylinder to produce the results is to alter the premise of the question. However, he may say that it would require a greater departure from what our senses tell us: it is easier to imagine that we mistake an uneven cone for an even one, if the unevenness is miniscule, than to imagine that we mistake a cone for a cylinder. It is when the objects of our sense data have become too small that we should recourse to the finer instrument of knowledge: that of the thought experiment. This is a marked contrast to the methodology of the pluralists, whose solution to the same problem is to conduct physical experiments on a larger scale.

This, then, is Democritus' methodology: the investigation of the results of an ὑποθέσις and its opposite, within his wider epistemological framework. This displays a subtlety in Democritus that Aristotle overlooks when he classes Democritus with those who observe that opposites arise from the same sensible thing, and conclude that statements and their negations are simultaneously true. He refers to Democritus' assertion that the full and the empty are similarly present in all parts and these correspond respectively to what is and what is not, and his claim that there is either no truth or that the truth is hidden from us.[208] Aristotle says that this is a variation on Anaxagoras' claim that a sensible object must have all properties, and that Democritus thinks that appearance=truth.

However, this account is inconsistent with Aristotle's other comments and contradicts what we have said of Democritus already. As Aristotle says, Democritus believes that the truth is hidden from us, and he will not admit that the objects we perceive with our senses have actual existence. Aristotle concedes that, for

[208] Aristotle, *Metaphysics* 1009a-b

Democritus, there is no such thing as colour.[209] Moreover, we have seen that Democritus makes use of the principle that a statement and its negation cannot be simultaneously true in his methodology: so it seems strange that he would abandon this rule here.

Aristotle's judgement is also inconsistent with evidence from other thinkers. For example, Plutarch tells us that Democritus is not of the opinion that everything is no more of one nature than another. In fact, he argues against Protagoras, who asserts it.[210]

We need not break our rule of placing textual evidence above our concerns for the philosophical coherence of the thinker to make sense of this. It is apparent that Aristotle's analysis of Democritus is superficial. Democritus may say that the statements 'this is blue' and 'this is not blue' are equally true when referring to any object, but this does not commit him to conclude that statements and their negations are simultaneously true. Rather, because the full and the empty (ἄτομα and void) are the true constituents of everything, and our impressions deriving from them are mere 'seemings' of a bastard kind, both of those statements have only conventional truth. They are equally true conventionally, but equally false absolutely. Genuine knowledge, as opposed to conventional knowledge, does require the rule that excludes the verity of contradictory statements.

The only textual evidence that we have rejected here is Aristotle's claim that Democritus holds contradicting claims to be absolutely true. We are justified in doing so because this contradicts the rest of Aristotles' account, and the evidence from Diogenes Laertius, Plutarch and Sextus Empiricus. Moreover, we have been able to account for Aristotle's oversight by reference to Democritus' epistemological priorities. Hence, what to Aristotle appears to be subjectivism turns out to be a systematic exposition of the kinds of things about which we may claim to know.

Once we recognise this, we may begin to reconstruct an account of Democritus' theory that is grounded in textual evidence and a good understanding of Democritus' methodology. This use of epistemological priorities in reconstruction is far more effective than Makin's assumption of philosophical coherence. For example, when Richard Baldes wishes to discover whether

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[209] Aristotle, *De Generatione et Corruptione* 316a1

[210] Plutarch, *Against Colotes* 4; Cf Sextus Empiricus, *Against the Logicians* I.389

Democritus wishes the ἄτομα to be mathematically indivisible, he makes use of Democritus' distinction between perceptual and genuine knowledge, and the account outlined in *De Generatione et Corruptione,* to conclude that mathematical division does occur. Because Democritus recognises two kinds of statement about an object – what appears and what actually is – he may say that ἄτομα as they appear are divisible everywhere.[211]

This account is not incompatible with Makin's claim that Democritus' ἄτομα are indivisible because they are homogenous, but it is clear that Baldes' argument is the stronger. It is consistent with the distinction between different kinds of knowledge we find in Sextus Empiricus, and grounded in the textual evidence from Aristotle. Moreover, Baldes explicitly refuses to let the anticipation of a response to Zeno determine his account of Democritus: conversely (and correctly), his analysis of Democritus' response to Zeno is built upon his reconstruction of the theory of ἄτομα. Unlike Makin, he does not rely upon Democritus' supposed philosophical coherence for his account, resulting in a more sophisticated appreciation of the theory. For example, Baldes' reconstruction leaves room for the recognition that Democritus' difficulty with 'divisible everywhere' does not mean that he rejects it altogether.[212]

Our reconstruction of Democritus' theory of ἄτομα should include this distinction between the different kinds of knowledge and Democritus' use of opposing claims. In the absence of textual evidence, we may speculate that his reasoning takes the following form: either there is unity or plurality, but not both. If there is unity, we are required to make a great departure from the evidence of our senses, without explanation of our 'seemings.' If there is plurality, we also need to reject the evidence of our senses, but the introduction of ἄτομα would explain how the same thing produces contradictory appearances. We should rely upon reasoning, not the senses, for things that have become too small, which includes ἄτομα. This also refutes the argument for unity, since the indivisibility of the ἄτομα excludes the

[211] Baldes [1978]

[212] This does not mean that we are committed to Baldes' conclusion, only that Baldes' case for mathematical divisibility is stronger than Makin's case for the reasons behind physical indivisibility. To be fair to Makin, his argument begins from the given that all other textual evidence is equal: his argument is meant to illustrate his methodology of historical reconstruction, not to be the final word on Democritus' theory. We make the comparison merely to illustrate the fact that Makin's method does not provide us with the sophistication we need, and is inferior to a methodology that pays particular attention to the thinker's epistemological considerations and priorities.

possibility that components can be reduced to nothing by infinite division. Therefore, thinks Democritus, the theory of ἄτομα is most likely.

Note that Democritus does not completely reject sense data, but merely recognises its limitations. Indeed, Aristotle remarks upon the reluctance of Democritus and his friend Leucippus to abandon the evidence of the senses, in favour of following where an argument leads.[213] Democritus recommends that sense-evidence should be supplemented by the 'finer instrument' of reasoning, and supplanted by it where the senses are not subtle enough to detect small objects. This is a marked contrast to Anaxagoras and Empedocles, whose solution to the problem of minute phenomena is to observe and manipulate the physical world on a larger scale. Unlike the natural scientists, Democritus prefers to use the thought experiment rather than the physical experiment in his construction of theory. Although his assertions are sometimes lacking in the necessary proof,[214] his method of inquiry is similar to Zeno's practice of opposing contradicting claims, sharing with Parmenides the rejection of opposites occurring at once. It also bears resemblance to the emerging method of 'proof by contradiction' that we shall see in our next section.

Pythagoras and the Pythagoreans

In our first Chapter, we noted that, although Pythagoras is undeniably associated with the mystical, he also displays a wish to investigate mathematics as an end in itself. Proclus says that Pythagoras transforms geometry into the form of a liberal education,

> ...examining its principles from the beginning and tracking down the theorems immaterially and intellectually.[215]

[213] Aristotle, *De Generatione et Corruptione* 325a
[214] Archimedes, *Method* p 13: Democritus is given credit for the assertion (but not the proof) that a cone is one third of a cylinder.
[215] Proclus, *Eudemian Summary* p 149

The Pythagorean tradition[216] views this kind of inquiry as the correct approach to the study of the world. In this respect, it is not so much a rejection of the sensible world, as a claim that the sensible world should be analysed through the framework of mathematics. Aristotle notes the doctrine 'all is number,' which he takes to mean that things are actually made up of numbers.[217] This theory is grounded in the conviction that it is possible to express anything in the world in terms of number, whether it is a physical entity[218] or an abstract concept like justice.[219] To study mathematics, for the Pythagorean, is to study everything.

We shall see how this commitment to mathematics as an end in itself allows the Pythagorean school to make advances that are absent in the Egyptian and Babylonian traditions. We shall then illustrate one aspect of the Pythagorean methodology: proof by contradiction. We shall show that the discovery of incommensurables (ironically, the discovery that undermines the basic principle of Pythagoreanism) is confirmed by this method. Finally, we shall review the role of Pythagoreanism in the context of the wider methodological debate.

As we saw, Pythagoras learns geometry from the Egyptians and arithmetic from the Babylonians. The Egyptians, although credited with the invention of mathematical sciences,[220] have little interest in theory. The Ahmes Papyrus contains no theories at all, only statements of results,[221] and we have already noted that their investigations arise from practical needs.[222] The Egyptians achieve considerable discoveries in mathematics, but after 1700 BCE, the discipline appears to have made no further advances. Cajori suggests that this could be due to the fact that the discoveries are entered into sacred books and, consequently, it becomes considered heretical to question them. In support of Cajori's theory, we may observe that the Egyptians certainly do not lack the linguistic infrastructure to make the kind of

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[216] Due to the ancient practice of attributing all Pythagorean discoveries to Pythagoras, we shall speak in terms of the Pythagorean tradition, rather than individual thinkers. See Heath's translation of *Elements* p 411: 'The problem of determining how much of the Pythagorean discoveries in mathematics can be attributed to Pythagoras himself is not only difficult; it may be said to be insoluble.'

[217] Aristotle, *Metaphysics* 986a; Cf Iamblichus, *Life of Pythagoras* XXIX

[218] Aristotle, *Metaphysics* 1092b8-13

[219] Aristotle, fragment 13 on the Pythagoreans in *Select Fragments*

[220] Plato, *Phaedrus* 274

[221] Cajori [1909]

[222] The calculation of areas arose from a need to reallocate land after the flooding of the Nile; Cf Proclus' *Summary* p 147; Cf Peet (trans), *The Rhind Mathematical Papyrus*, Book I p 77-9: problems are phrased in practical, particular terms such as the division of loaves in unequal proportions, rather than as universal principles.

mathematical advances that we shall go on to discuss: Middle Egyptian possesses a sophisticated system for the expression of conditionals and the gradation of their relative strength.[223] Therefore, it is likely that the fixation of the discipline does occur for cultural and religious reasons. It is also notable that the Egyptians attribute the invention of mathematics itself to the god Thoth.[224]

The beliefs of Pythagoras and the Pythagoreans are in some ways similar to those of the Egyptians. Pythagoras does pay attention to religious practices in Egypt, although he does so from political motivations.[225] Egyptian religion has much in common with Pythagoras' own beliefs: Pythagoras incorporates the implications of Egyptian peculiarities into his theory of number. For example, with the sole exception of 2/3, no Egyptian fraction is ever written with a greater numerator than one: they are reduced to the sum of fractions whose numerator is one, with 2/5 expressed as 1/3 1/15.[226] Similarly, in Pythagorean philosophy, the monad or unit is the principle of all things. There is also a special place for the dyad, or two, in both schemes: in Pythagoreanism, it is the material substratum to the monad.[227]

Nevertheless, Pythagoras and the Pythagoreans are able to make advances that the Egyptians do not. We suggest that this is a result of the Pythagorean doctrine 'all things are likened to number.' For a Pythagorean, to investigate number is to investigate the world, so the Pythagoreans are concerned with the properties of number in themselves, not just their practical use. Although Pythagorean doctrine is in some ways very mystical, it does not derive from dogmatic pronouncements of the gods, so to challenge previous observations is not in itself sacrilegious. In this way, the Pythagorean engages with the principles that govern the universe in a way that the follower of Egyptian religion cannot. This follows the tradition of which we spoke in our previous chapter: the conviction that

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[223] There is a distinction in strength between a protasis that asks, 'if/when...?' (jr+subjunctive/prospective), one that asks, 'should...?' (subjunctive alone) and one that says, 'given that...' (perfect/imperfect relative form). Although all three types may be translated as 'if...', this clearly equips the speaker to make the kind of claims that we shall see the Pythagoreans asserting. See Allen [2000] S.19.7, 25.11.1. Moreover, the use of 'balanced sentences' would also allow the use of opposing claims. See Loprieno [1995] S.7.8.

[224] Plato, *Phaedrus* 274. However, we should recognise that this is not in itself conclusive evidence, merely an interesting aside. To blame the stagnation of Egyptian mathematics upon the myth of its origin would be to commit the Fallacy of the Homogenous Past. Having said this, it is interesting to see that the Greek myth of the origin of mathematics features Prometheus teaching man this skill to the annoyance of the gods, an act for which Prometheus is often esteemed. Cf Aeschylus, *Prometheus Bound* 443-483

[225] Herodotus, *Histories* 2.123

[226] Peet (trans), *The Rhind Mathematical Papyrus*, Plates A-E and Commentary

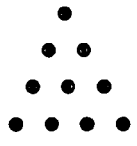
[227] Diogenes Laertius, *Lives* VIII.25

there is a rationale behind the universe that we are equipped to discover is empowering to those who hold it. This is the difference between the sage and the philosopher.

We are also told that Pythagoras learns arithmetic from the Babylonians, and applies the principles of arithmetic to his knowledge of geometry.[228] Concern for precision and the appropriate use of frameworks allows the Pythagoreans to surpass Babylonian discoveries. Babylonian mathematics makes little distinction between approximate and exact truth, concerning itself with the particular rather than the universal, which we have already said is not Pythagorean practice.[229]

Moreover, in Babylonian mathematics, line segments are freely added to areas.[230] This is not common practice in Pythagorean geometry, which differentiates between the point, the line, the surface and the volume. This can be seen in their reverence for the τετρακτύς (below), which derives from the decad.

The decad is the key to Pythagorean ontology. It is complete, because the number ten represents the limit of the universe, embracing the nature of numbers.[231] Consequently, the τετρακτύς is supposed to hold the 'roots of Nature ever-enduring,'[232] because the universe is arranged according to harmony. The intervals considered harmonic are the octave (1:2), the fifth (2:3) and the fourth (3:4). The τετρακτύς supplies the ratio to describe this, 4:3:2:1. This is possibly a result of Pythagorean achievements in harmonics, as described by Plato.[233]



point
line
surface (plane)
volume (solid)

Moreover, each level of the τετρακτύς contains a different mathematical dimension. This illustrates the fact that the Pythagoreans recognise the different

[228] Ibid VIII.11
[229] Coolidge [1963]
[230] Waerden [1983]
[231] Aristotle, *Metaphysics* 986a9-11
[232] Sextus Empiricus, *Against the Logicians* I.94;
[233] Plato, *Republic* 530d-331c

categories of dimension.[234] We even see evidence of theory of the generation of these, with each level giving rise to the next. This also shows the nature of the doctrine, 'all is number': the solid figures give rise to the sensible bodies, in the same way that the plane figures give rise to the solids. It also justifies the importance of the monad, as all things arise from it.[235]

We see that the Pythagorean commitment to the study of mathematics in itself allows them to make advances denied to those who regard it as a set of rules whose rationale is not to be questioned. Moreover, attention to different frameworks makes Pythagorean geometry much more precise than its Babylonian counterpart. This ontology is part of the wider Pythagorean epistemology.

Other epistemological concerns of note are the use of opposites and an interest in odd and even numbers. The Pythagorean Quadrivium contains geometry, arithmetic, sphaeric (astronomy) and music.[236] Proclus tells us that arithmetic is the study of multitude at rest (discrete),[237] as opposed to geometry, the study of magnitude at rest (continuous); Music is the study of multitude in motion, as opposed to astronomy, the study of magnitude in motion.[238] Thus, the ontology of Pythagorean mathematics is built upon the need to investigate opposing themes. Aristotle lists the following pairs of opposites as being of concern to the Pythagoreans: limited/unlimited; even/odd; one/many; right/left; male/female; still/moving; straight/bent; light/darkness; good/bad; square/oblong.[239]

We also see an interest in the relationship between these pairs of opposites, with consequences for the properties of odd and even numbers. The Pythagoreans see odd and even as elements of number.[240] The 'even' is 'undetermined,' which is enclosed and determined by the odd unit.[241]

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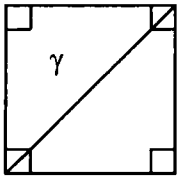
[234] See Heninger [1974] p 71-86
[235] Diogenes Laertius, *Lives* VIII.25
[236] Archytas, in Porphyry's *Commentary on Ptolemy's Harmonics,* cited in Thomas [1939] p 5
[237] The Pythagorean refusal to accept the existence of any number that it is not an integer means that, for them, multitudes constitute a discrete framework. Cf Plato, *Republic,* 525de: 'experts in the subject' will not concede that the unit is divisible. Cf Euclid, *Elements* VII, Definition 2, 'A number is a multitude composed of units.'
[238] Proclus in Heninger [1974] p 85-86
[239] Aristotle, *Metaphysics* 986a
[240] Ibid 986a
[241] Aristotle, *Physics* 203a4-15

This information allows us to reconstruct a Pythagorean methodology at which Aristotle hints when he speaks of the proof for the irrationality of $\sqrt{2}$ and the incommensurability[242] of the side of a square with its diagonal:

> ...the diagonal is incommensurable because if it is put as commensurable, then odd numbers become equal to even ones. It *deduces* that odd numbers become equal to even ones, then, but it *proves* the diagonal to be incommensurable from an assumption since a falsehood results by means of its contradiction.[243]

The discovery of irrationals and incommensurability go hand in hand, if we know Pythagoras' theorem:[244]



Use Pythagoras' theorem (on any right angled triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides) to find $\alpha^2+\beta^2=\gamma^2$. If α and β each measure one unit, $\gamma^2=2$. So $\gamma=\sqrt{2}$. If $\sqrt{2}$ is irrational, the diagonal is incommensurable with the side.

We may prove the incommensurability of $\sqrt{2}$ with unity by the method that Aristotle speaks of in the above passage of *Prior Analytics*: proving the original when something impossible results from its contradiction. This is supported by the first Scholium on Book X of the *Elements,* which credits the Pythagoreans with the discovery of the irrational.[245] The Appendix to Book X sets a method for proving incommensurability of $\sqrt{2}$ with unity, but does not link this method with the Pythagoreans. It seeks to prove that AB, the diagonal of a square, is incommensurable with its side, AC. Therefore, we should investigate the result of the opposing ὑποθέσις, that AB is commensurable with AC. In this case, we should be able to express their ratio in its lowest terms $\gamma:\alpha$. So $\gamma>\alpha$ and therefore >1.

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[242] 'Those magnitudes are said to be commensurable which are measured by the same measure, and those incommensurable which cannot have any common measure.' Euclid, *Elements* Book X Definition 1

[243] Aristotle, *Prior Analytics* 41a26-32

[244] We cannot explore the discovery of the Pythagoras' theorem here. It is likely that it was Euclid who refined the theorem, building upon earlier Pythagorean work. See Euclid, *Elements* I.47; Cf Proclus' *Summary* in Thomas [1939] p 185. See also Heath's translation of the *Elements* pp 352-356 for discussion. To make our point, we need not argue that the Pythagoreans give the proof as it appears in Euclid, only that they know of the rule.

[245] Euclid, *Elements* X, Scholium I in Thomas (trans),[1939] p 215

$AB^2:AC^2=\gamma^2:\alpha^2$. According to Euclid I.47, $AB^2=2AC^2$, so $\gamma^2=2\alpha^2$. Therefore, γ^2 is even, so γ is even. Since $\gamma:\alpha$ is in its lowest terms, α must be odd. For some number, β, $\gamma=2\beta$. Therefore, $4\beta=2\alpha^2$ or $\alpha^2=2\beta^2$. So α^2 and therefore α is even. But α was also odd, which is impossible.[246]

In spite of the lack of textual evidence linking this method of the Appendix to Book X with the claim in the Scholium that it is the Pythagoreans who discover the incommensurability of $\sqrt{2}$ with unity, we may identify this as the probable method of the Pythagoreans.[247] This claim is supported by our earlier observation of Pythagorean concern for odd and even numbers and their use of opposites, and of course, the evidence in the *Prior Analytics*. We see that this 'proof by contradiction' shares characteristics with Democritus' and Zeno's methodologies: in order to establish a truth, the opposing ὑποθέσις is considered, and shown to be impossible. The arguments work on the assumption that two contradictory claims cannot be simultaneously true.

The irony is that it is the Pythagorean interest in 'principles from the beginning' leads to the discovery of incommensurables. This crisis undermines the basic Pythagorean doctrine, 'all is number' because they wish to say that all things in the world can be expressed as integers, or as a ratio of integers, which is impossible with incommensurables. The one who made this known is said to have drowned at sea in a shipwreck, surrounding which there is great controversy.[248]

The severity of the discovery of incommensurables can be seen in its effects upon the prestige of geometry in the long term. Heath[249] says that the Pythagoreans allocate the discovery to the realm of geometry, citing the fact that Euclid X speaks in terms of straight lines and areas, and that Proclus speaks of irrational straight lines. If this is true, we may see the effects of this upon the confidence in geometry of other thinkers in the fifth century. Plato regards geometry as inferior to

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[246] Heath's translation of Euclid's *Elements* Vol 3 p 2

[247] Fritz [1945] thinks that the discovery of incommensurables was probably made by that Hippasus in the last quarter of the fifth century. Wasserstein [1958] thinks that Fritz has confused the story of Hippasus' drowning at sea as a punishment for divulging the Pythagorean secret of how to inscribe a dodecahedron in a sphere (Iamblichus, *Life of Pythagoras* XVIII) with the legend we mentioned about the divulger of incommensurables suffering the same fate. Fritz is not confused; he uses Hippasus' interest in the sphere of twelve pentagons to devise an alternative way of discovering incommensurables. However, there is no textual evidence to support this, so our account of the discovery being made by the use of opposing claims, being based upon textual evidence, is the most likely.

[248] Euclid, *Elements* X, Scholium I in Thomas [1939] p 217

[249] [1960] Ch 3

arithmetic,[250] and we may even take his dialogue *Meno* to be a plea for geometers to improve their discipline.[251] Certainly the discovery of incommensurables took some time to overcome, and were a difficulty even by Euclid's time: the *Elements* postpones the theory of proportion, which avoids the problem of incommensurables, until Book V, and uses the gnomon to solve problems for which a modern geometer would use similitude.[252]

Let us examine this discovery and methodology in the context of the wider debate. We see that the problem of incommensurables can be linked to the idea if infinite divisibility. This causes serious asymmetry in the Quadrivium, because what can be said of multitudes cannot be said of magnitudes:

> ...for though the unit is a common measure of all numbers they [the Pythagoreans] could not find a common measure of all magnitudes. The reason is that all numbers, of whatsoever kind leave some least part which will not suffer further division; but all magnitudes are divisible *ad infinitum* and do not leave some part which will not admit of further division, but that the remainder can be divided *ad infinitum*; and in sum, magnitude partakes in division of the principle of the infinite, but in its entirety of the principle of the finite, while number in division partakes finite, but in its entirety of the infinite...[253]

Given this connection, we may see a correspondence to Zeno's paradoxes, as described in the first section of this Chapter. As we saw, Arrow and Dichotomy concern objects moving against stationary frameworks, whereas Stadium and Achilles concern objects moving in relation to other moving objects. Although there is no textual evidence to confirm that either party intended to mirror the categories of the other, the correlation is rather striking:

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[250] See *Republic* 527a: geometry as it is now practised is wrongly directed towards practical ends.
[251] Malcolm Brown [1971]. Brown relies on the fact that when ἀλλά is used in a conditional sentence to introduce the apodosis, where a command is expressed and the protasis is negative, the substitute is inferior: 'if you don't want to count it up [arithmetic], just show us on the diagram [geometry]' *Meno* 24a. The geometric alternative is inferior to the arithmetic.
[252] *Elements* V; Cf Coolidge [1963] Chapter II §3. See *Elements* II.5 for the first application of the gnomon; Cf Chapter One of this paper, on Anaximander. The Pythagorean use of the gnomon, which we cannot discuss here, is testimony to their wish to express the world in terms of integers, which explains their delight that a monad added to a gnomon produces a square number.
[253] Euclid, *Elements* X, Scholium I in Thomas [1939] p 215-217

Pythagorean Quadrivium:		Zeno's Paradoxes:	
Multitudes at rest:	Arithmetic	Arrow	(Discrete)
Magnitudes at rest:	Geometry	Dichotomy	(Continuous)
Multitudes in motion:	Music	Stadium	(Discrete)
Magnitudes in motion:	Astronomy	Achilles	(Continuous)

The result of both the Pythagoreans and Zeno arranging their inquiries in this way is that they effectively put into practice Parmenides' methodological advice of investigating claims in different contexts:

> ...whatever you hypothesize about...you must always investigate the results in relation to itself and in relation to each one of the different things, whichever you choose – in relation both to many and to all of them, likewise.[254]

For Zeno, the problem of motion may only be addressed by considering the consequences in both a continuous and discrete framework; against a framework that is both at rest and in motion. For the Pythagoreans, the discipline of mathematics must address both multitude and magnitude, and each of these should consider cases of both rest and motion. The problem for the Pythagoreans arises when the Pythagorean theory of proportion, applicable to commensurables only, cannot fully account for geometric concerns.[255]

The method of investigating opposites such as magnitude and multitude is shown to be seriously flawed with the discovery that the same rules do not apply in each case: there is no common measure for magnitude as there is for multitude. As a result, Pythagorean optimism that the world may be investigated and expressed in terms of number is severely undermined.

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[254] Plato, *Parmenides* 136b-c. Interestingly Parmenides has been described as a 'dissident Pythagorean,' eg F M Cornford [1939] p 28

[255] Although the Friedlein text of Proclus' *Summary* says that Pythagoras discovers a theory of irrationals ἀλόγων, Thomas [1939] rejects this in favour of the reading ἀναλόγων, proportionals. We object to Thomas' reason for this decision, which refers to the story that one who made known the discovery of incommensurables was drowned for impiety. Both this and the story of Hippasus' drowning are based upon disclosure, not discovery. In the light of the resemblance of the Pythagoreans to a cult alongside their interest in mathematics for its own sake, and not for the sake of dogma, it seems more likely that the investigation of incommensurables and irrationals is pursued by the Pythagoreans as a necessity. Despite the uncomfortable implications for their number theory, disclosure, not discovery, is a sacrilege. Nevertheless, Heath [1960] agrees with the reading ἀναλόγων, and we shall consent to it because it allows for the influence of later Pythagorean discoveries, not for Thomas' reasons.

The debate as a whole has produced the following results. Zeno, the Pythagoreans and Democritus all employ the methodology of opposing claims, and both Zeno and the Pythagoreans show concern for analysis in opposing contexts (magnitude/multitude; rest/motion). However, the results of these investigations do not inspire confidence. Zeno's paradoxes result in the assertion that neither a discrete nor a continuous framework can explain phenomena like motion. Democritus' deployment of this method concluded that the lines of geometric shapes such as cones must be discrete, 'receiving many step-like incisions and roughnesses.' This discrete framework can be seen to be mirrored in his physical theory of ἄτομα, which are, at least, physically discrete; possibly mathematically discrete. However, for the Pythagoreans, the application of the same methodology produces the result that not every relationship can be described as a ratio of integers, so geometric magnitudes are infinitely divisible continua.

This alone is enough to undermine the idea that a rational universe may be explored by the application of a rational methodology, but the production of contrasting results is not the only cause for concern. The Pythagoreans have asserted that the appropriate way to study the world is by using the language of mathematics, and invest in developing the study of mathematics with cultish fanaticism. However, it is their own investigations that demonstrate the inability of ratios of integers to express relationships. This is a serious methodological concern because the use of opposing claims in the thought experiment is no longer a means to absolute truth. In our next Chapter, we shall see that the relativists, rather than abandoning this methodology, abandon the ideal of absolute truth.

Part Two: The Political Theorists Respond to the Debate

Chapter Three: The Relativists

As we saw in the previous chapter, the epistemological optimism about the existence of a discoverable rationale underlying the universe receives a serious setback when the analytical framework is revealed to be inappropriate. What had seemed to be a perfect language, mathematics, now seems to be distinct from the physical world it aspires to describe. This debate comes to a head in the fifth century in Athens, where epistemological debates are taking place among the intellectual elite. We see the emergence the claim that there is no such thing as absolute knowledge, resulting in moral relativism and the political conservatism that is to be discussed here.

This chapter will explore the ideas of Protagoras, Gorgias, Euthydemus and Dionysodorus, who are members of a group of teachers known as the Sophists. We shall see how their response to the methodological debate results in the ideas of moral relativism and explains the political conservatism that can be seen to arise from it. The ghastly tendency of some historians to make claims about the Sophists as though the general trend applies to each particular thinker has already been discussed: we shall limit our claims to particular observations grounded in the evidence for each thinker. However, we should attend to an observation made by Richard Bett, that there is an unjustified tendency to regard the Sophists as relativists, due to a belief that Protagoras is representative of all Sophistic views, or too hasty an examination of the relationship between Plato and the Sophists. Bett thinks that only Protagoras can be said to be a relativist, and only on the basis of his 'Measure' Doctrine.[256] While we shall show that, in fact, all of the thinkers in this chapter can be said to be relativists,[257] Bett's point is a valid one: relativism is a precise term, and should only be applied to a thinker upon careful analysis of the evidence, which we shall take care to do.

We said that relativism is the view that statements may only be deemed correct or incorrect by reference to a certain framework. Because there is no single

[256] Bett [1989]

[257] In fact, Bett commits the Fallacy of the Homogenous Past: he cites the claim that a deep sense of relativism is alien to Greek philosophy as a whole, to support his argument about particular thinkers.

correct framework to use, there is no absolute truth. We should distinguish between metaphysical relativism and epistemological relativism. Metaphysical relativism is relativism about reality: it says that reality is relative to the person doing the observation, or the framework from which reality is assessed. Epistemological relativism is relativism about truth: it states that a claim is only true or false in relation to the person making it, or the framework to which it belongs.

We shall see how the relativists in this Chapter acknowledge the existence of different frameworks of analysis, which we shall call matrices. A matrix is something from which new rules are generated, and we shall see that the relativists distinguish between the rules that operate within individual matrices and the rules which describe how the matrices work. Notably, the rejection of the idea that there is a 'correct' matrix to be used results in the relativisation of the principle of non-contradiction. Protagoras, Gorgias, Euthydemus and Dionysodorus all believe that the principle should operate within each matrix, but they all reject the idea that it may be used as a measure of absolute truth. The relativists settle for the attainment of relative truth, by acknowledging that the principle of non-contradiction need not apply to the conclusions of different matrices.

Where the theory is economical, epistemological relativism tends towards a conservative political theory, because it does not propose that any one matrix is the correct one from which to assess truth. Therefore, a relativist standpoint will provide a critique of conventional morality, νόμος, because νόμος does not amount to absolute truth. However, it will not seek to replace νόμος with any other model, because no other framework is the correct one. Therefore, the relativist acquires the conservative's practice of working within the established institutions for reform, rather than revolution, acknowledging the limits of what politics can achieve.[258]

Protagoras

We shall examine Protagoras' methodology as a modification of the use of the principle of non-contradiction. We shall see how his critique of mathematics is

[258] Without wishing to make the mistake of assuming the homogeneity of conservative theories across the ages, this practical approach to politics, emphasising the historical process of building institutions over abstract ideals, is typical of conservative theory. See Burke [1999]. Continuity is important because '...the pride of human intellect...with all its defects, redundancies, and errors is the collected reason of ages...' p 95

linked to his relativist position that there is no ultimate matrix which we can use to analyse the world. Rather, truths are bound to the matrices that generate them, so although consistency is important within each argument, the principle of non-contradiction, and, by extension, proof by contradiction is no means to absolute truth. Protagoras' methodology concerns claims whose verity is bound to the matrices which generate them. Because no one framework is preferable to another, Protagoras adopts a conservative political theory of working with existing values and institutions, rather than seeking to replace them with a new order.

It is reasonable to speculate that Protagoras' relativism is a result of his critique of mathematics. The debate in the fifth century is certainly ripe for such a contribution from Protagoras, as it is likely that the discovery of incommensurables is a problematic issue in his time. Certainly the irrationality of $\sqrt{2}$ has been discovered before the time in which *Theaetetus* is written, because Theodorus demonstrates the irrationality of $\sqrt{3}$, $\sqrt{5}$...$\sqrt{17}$, implying that it was someone earlier than he who discovered the irrationality of $\sqrt{2}$. Conceivably, the discovery is discussed prior to Protagoras' exile from Athens.[259] It is also worth remembering that Protagoras' doctrine is discussed almost directly after the discussion of irrational roots in *Theaetetus*.

It is also telling that Aristotle's account of his 'Measure' Doctrine is dealt with in the same section as his description of the diagonal and the side of the square being measured by two things:

> When Protagoras quipped that man is the measure of all things, he had in mind, of course, the knowing or perceiving man.[260]

We shall discuss this doctrine in more detail presently, but first, we should note that Protagoras certainly feels that mathematics is an inappropriate framework within which to analyse the world. He says that none of the sensibles are straight or curved in the way that the geometer pronounces; the circle does not touch the ruler at a geometric point.[261] However logical mathematics may be, it does not describe

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[259] The dramatic date of *Theaetetus* may be 394 BCE or 369 BCE. See Waterfield's essay in his translation of *Theaetetus* [1987].
[260] Aristotle, *Metaphysics* 1053a; Cf Diogenes Laertius *Lives* IX.51; Cf Plato, *Theatetus* 152a; Cf Sextus Empiricus, *Outlines of Pyrrhonism* 1.216
[261] Aristotle, *Metaphysics* 998a

the world we see around us, because geometric lines cannot be equated with the sensibles.

Perhaps this can be seen in the conversation that Simplicius records between Protagoras and Zeno. When Zeno asks Protagoras if one millet seed produces a sound when it falls, or a ten-thousandth of a millet seed, Protagoras answers that it does not. Zeno says that, because there is a ratio, λόγος, of a medimnus of millet seeds (which do make a sound) to one millet seed, and to a ten-thousandth of one, then the ratios of their sounds should be the same. Therefore, one millet seed or a ten-thousandth of a millet seed should make a sound, however small.[262] Note that Protagoras agrees with Zeno that the ratios exist: he is not saying that the conclusions of mathematicians do not follow logically from their premises,[263] nor is he ignorant of the discipline.[264] His point is rather that mathematics is useless in accounting for phenomena in the sensible world.

For Protagoras, mathematics is not incorrect, but irrelevant. As Aristotle points out, the fact that the power of haulers and the distance they move a ship is divisible by the number of haulers does not mean that one hauler can move a ship.[265] Even if we concede that the theory of ratios is a coherent one in itself, it does not give us the correct results if applied indiscriminately to the physical world. Like a computer programme, mathematics' fidelity to logic should be infallible, but we should ensure that there is an exact correlation between the objects we wish to investigate, and the symbols with which they are represented in our analysis. For the modern physicist, mathematics is informative when applied correctly; for Protagoras, it should not be applied at all.

Mathematics cannot describe the world, Protagoras thinks, because its subject matter is unknowable, and its terminology distasteful.[266] Its inscrutability derives from the fact that we have no experience of its objects, suggesting that Protagoras would prioritise sense evidence in investigation. However, Protagoras acknowledges that sense evidence is contradictory,[267] because when the same wind blows on two people, one may feel cold but not the other. As a result:

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[262] Simplicius, *On Aristotle's Physics* 1108, 19-30
[263] As later sceptics, such as Sextus Empiricus in *Against the Professors* III and IV were to do.
[264] Diogenes Laertius tells us that Protagoras studied under Democritus: *Lives* IX.50
[265] Aristotle, *Physics* 205a9-27
[266] Philodemus of Gardera, *On Poetry* in Sprague [2001] p 22
[267] Diogenes Laertius, *Lives* IX.51 says that, for Protagoras, the mind is nothing but the senses. Diogenes Laertitus follows Plato, *Theaetetus* 152a, but he interprets this as accounting for sense data

> ...it is cold for the one who feels cold, but not for the one who doesn't.[268]

Protagoras applies this reasoning to many objects:

> But I know plenty of things – foods, drinks, drugs, and many others – which are harmful to men, and others, which are beneficial...So diverse and multiform is goodness that even with us the same thing is good when applied externally but deadly when taken internally.[269]

Therefore, despite Socrates' plea at *Protagoras* 331c to leave qualifiers out of the argument, Protagoras points out that this would invalidate any claims he would wish to make, for

> ...everything resembles everything else up to a point. There is a sense in which white resembles black, and hard soft, and so on with all other things that present the most contrary appearances...But it is not right to call things similar because they have some one point of similarity, even when the resemblance is very slight, any more than to call things dissimilar that have some point of dissimilarity.[270]

We may recall Ps-Hippocrates' criticism of the method of contradiction, which we saw was that it excluded the use of more than one explanation for a phenomenon, resulting in an oversimplified explanation: it may say that α is the cause, and not β, but it does not account for the fact that ε may also be involved. However, there is a subtle yet very important difference between this and Protagoras' criticism of the method (the importance of which will be especially apparent in our next chapter). Protagoras has no wish to explain phenomena that exist in the outside world as Ps-Hippocrates does: he demands only a coherent argument. His point is that the method of 'proof by contradiction' is inappropriate, because it relies upon the assumption of absolutes. When α and β are opposites, this

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only, excluding the possibility of other kinds of judgement. There are no grounds for this, as in *Theaetetus*, Protagoras wishes to say that all perceptions, of which sense data is only a part, are valid.

[268] Plato, *Theaetetus* 152b; Cf Sextus Empiricus, *Outlines of Pyrrhonism* I.219

[269] Plato, *Protagoras* 334ac

[270] Ibid 331ce

method would say, 'the truth is either α or β; it cannot be both.' Protagoras would wish to say, 'it is α in respect of γ, but β in respect of δ.' Whereas Ps-Hippocrates' criticism of the method is that the results it produces are not complete, Protagoras' criticism is that they are not specific.

Protagoras does not deny the existence of opposites.[271] On the contrary, he says that every argument has a contradicting argument.[272] However, this does not mean that Protagoras must concede that opposing these arguments is a means to absolute truth. Indeed, for Protagoras, οὐκ ἔστιν ἀντιλέγειν: it is impossible to contradict.[273]

Protagoras' justification for this could be either that the wind is both hot and cold (subjectivism) or there is no wind in itself, but two private winds relative to the two observers (private worlds view). Both would support a relativist position. The subjectivist interpretation would say that the state of the observer determines which of the properties is observed, so the truth we perceive is relative to the state we are in (epistemological relativism); the private worlds view would say that a claim is true only in relation to the private world of the one making who makes it (metaphysical relativism).

Aristotle thinks that Protagoras is violating the law of non-contradiction, because it means that a statement and its negation must be simultaneously true.[274] If Aristotle were correct, this would imply that Protagoras held a subjectivism similar to that of Heraclitus, because it would mean that, for him, objects must hold contradicting properties to explain our perception of them. Sextus says that Protagoras does think that contradicting properties are present in the matter, suggesting that Protagoras is a subjectivist.[275] It is possible that Sextus follows Plato in *Theaetetus*[276] in saying that the world contains the properties we describe. Both Sextus and *Theaetetus* attribute to Protagoras the doctrine of flux associated with Heraclitus to justify this subjectivism. Plato suggests that it may explain Protagoras' relativism.[277]

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[271] Ibid 332ae
[272] Diogenes Laertius, *Lives* IX.51; Cf Clement, *Miscellanies* VI.VIII
[273] Plato, *Euthydemus* 286bc
[274] Aristotle, *Metaphysics* 1009a
[275] Sextus Empiricus, *Outlines of Pyrrhonism* I.218
[276] Plato, *Theaetutus* 152de
[277] Ibid 156c-157c

However, a closer examination of Aristotle's interpretation and the evidence of *Theatetus* will expose this as incorrect. Aristotle bases his analysis upon Protagoras' claim that οὐκ ἔστιν ἀντιλέγειν, not upon his supposed subjectivist metaphysics. He infers that Protagoras implicitly violates the law of non-contradiction, but his account suggests that Protagoras does not do this explicitly.[278] Re-evaluation will show that Aristotle's inference is invalid, so we may reassess the claim that Protagoras is a subjectivist, deciding in favour of the private worlds interpretation.

In fact, Protagoras is concerned with being consistent, and this for him does not include the simultaneous truths of opposing claims. This is made clear when Protagoras discusses Simonides' poem. He says that Simonides' two claims: that it both is, and is not, a difficult thing to be good, are inconsistent, so

> Either his first or his second statement is wrong.[279]

Moreover, Protagoras is concerned with consistent classification in language: it is he who classifies nouns into masculine, feminine and neuter cases.[280]

Additionally, Protagoras refuses to commit to absolute truths at all, and his use of qualifiers means that he need not subscribe to subjectivism. Protagoras may say that the wind is cold to him, but warm to Socrates, without having to say that the wind is both warm and cold in itself. Indeed, his insistence upon the use of qualifiers in his conversation with Socrates shows him to be most concerned to link the verity of his claims about the properties of objects to a particular framework.[281] Given these points, it does seem that Protagoras' relativism – his referral of claims to a particular framework – is directly linked to his fidelity to the law of non-contradiction (within each matrix), not his rejection of it, as Aristotle supposes.

In addition, the evidence from Sextus and *Theaetetus* contradicts that of other thinkers, including other evidence from Plato himself. In *Cratylus,* Plato does not link Protagoras to the doctrine of flux – he deals with the two theories

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[278] Aristotle, *Metaphysics* 1009a
[279] Plato, *Protagoras* 339d
[280] Aristotle, *Rhetoric* 1407b6; Cf Diogenes Laertius, *Lives* IX.52
[281] Plato, *Protagoras* 331de

separately.[282] Moreover, Plato's account of Protagoras here excludes the existence of things in themselves:

> Do you agree [with Protagoras] or do you believe that things have some fixed being or essence of their own?[283]

Didymus the Blind's account also supports this reading. His account of Protagoras relegates 'being' to the status of 'being perceived', which means that the world can have no separate existence from the observer.[284]

To account for this, we should remember that, in *Theaetetus*, Socrates is trying to reconstruct Protagoras' theory for the purpose of attacking it. The fact that Plato describes flux as Protagoras' 'secret doctrine' in *Theaetetus*[285] suggests that Protagoras does not explicitly defend it. Perhaps *Cratylus* holds the clue: in the same way that Hermogenes feels forced to take refuge in Protagoras' doctrine, despite the fact that he does not agree with it,[286] Plato feels that Protagoras must seek refuge in flux theory to support his relativism, even though Protagoras does not explicitly do so. The result is that, in trying to be fair to Protagoras by representing his views upon the strongest case (he thinks) possible,[287] Socrates erroneously links him with the doctrine of flux. Socrates' fear of failing to represent Protagoras accurately[288] and the label 'secret doctrine' in *Theaetetus*, should warn us that Protagoras does not explicitly defend subjectivism and flux theory.

Given this, we may reject the idea that, for Protagoras, objects have an independent existence. Certainly as far as knowledge is concerned, claims are made with respect to the observer's private world. This is how it is possible for him to hold both that opposing claims are true and οὐκ ἔστιν ἀντιλέγειν without contradiction. Protagoras says that the wind is cold; Socrates says that it is not. Both are true, because each refers to his own private world. In addition, it is impossible to contradict because each man is sovereign in his world. Each man is the measure of all things in his own private world.

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[282] Plato, *Cratylus* 385e-387d for Protagoras and 401a-440e for Flux Theory
[283] Ibid 386a
[284] Didymus the Blind, Fragment in Gronewald [1968]
[285] Plato, *Theaetetus* 152cd
[286] Plato, *Cratylus* 386a
[287] Plato, *Theaetetus* 166a
[288] Ibid 168c, 171d

This is consistent with Protagoras' rejection of mathematics as a means of telling us anything, especially geometry. Recall Thales' use of geometry to investigate the distance of a ship from the shore. Thales works on the assumption that the measurements that apply to the triangle will also apply to the real world, as he has imposed the triangle onto actual points in the real world. However, for Protagoras, the perfect triangle does not exist in the physical world – indeed, there is no absolute physical world in which it may exist, so it is illegitimate to use it to investigate the position of sensibles, just as it is illegitimate for Zeno to use ratios to investigate the sounds made by the sensibles.

If Socrates and Protagoras discuss whether the wind is hot or cold, they are speaking about two different winds: the wind for Socrates and the wind for Protagoras. This is why there can be two opposing claims without violating the law of non-contradiction. Likewise, if Socrates and Thales are both looking out to sea, they are looking at two different ships: the ship for Socrates and the ship for Thales. If they both agree upon the distance of the ship from the shore, the measurement is legitimate because it appears so to each man, not because of the geometric method. Even if Thales' judgement is grounded in geometry, its validity derives from Thales' confidence in it, not from the validity of geometric claims themselves. Through his judgements, Thales creates his own world. Οὐκ ἔστιν ἀντιλέγειν arises from the absence of an ultimate matrix against which we can measure truth: there is no 'no man's land' between the private worlds, and thus no justification for setting the standard of truth in one man's world rather than another. As Protagoras points out, the fact that a madman is in a certain state is no reason for disregarding his judgements, as everyone is in a certain state of mind.[289]

Protagoras' rejection of absolute frameworks is the basis for his methodology. Without an absolute framework, there can be no absolute truth, so Protagoras denies absolute knowledge.[290] This allows him the freedom to engage in the kind of metaphysical inquiry that we identified as the most valuable: the kind of 'what if' that needs not begin from an absolutely true premise. For example, when Socrates wishes Protagoras to assent to the claim that justice is holy and holiness just, he replies,

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[289] Sextus Empiricus, *Against the Logicians* I.63

[290] Note Protagoras' agnosticism in Diogenes Laertius, *Lives* 9.8.51; Cf Sextus Empiricus, *Against the Physicists* I.56; Cf Eusebius, *Preparation of the Gospel* in Sprague [2001] p 20; We reject the testimonia from Diogenes of Oenoanda, for the reasons given in the introduction.

> I don't think it is quite so simple, Socrates. I can't really admit that justice is holy and holiness just; I think there is some difference there. However...what does it matter? If you like, let us assume that justice is holy and holiness just.[291]

This is frustrating for Socrates, who does believe in the existence of absolute truth. Socrates thinks that all meaningful inquiry should surround 'what is' rather than 'what if', and is reluctant to proceed with an argument unless his partner wholeheartedly agrees with the step he makes.[292] For Protagoras, on the other hand, all truth is relative to its framework, so as long as the steps in the argument are consistent, it does not matter whether the premises are grounded in actual fact.[293]

This distinction allows Protagoras to uphold the doctrine, 'man is the measure of all things,' because it means that man sets the framework against which all truths are to be measured. In *Theatetus*, Socrates points out:

> ...when he concedes that statements contrary to his own are true, then even Protagoras himself will concede that no dog and no ordinary person is a measure of anything at all, unless he understands it.[294]

Socrates' point is that (M) is self-refuting: (M) claims that all opinions are true, but if Socrates is of the opinion that (M) is false, then Socrates' opinion, that (M) is false, must be true. To some extent, Protagoras' use of qualifiers invalidates this argument, because he is able to say that (M) is true for Protagoras, but false for Socrates. This has the effect of limiting (M) to the status of a relative claim; Protagoras would not be able to say that it is an absolute truth.

We shall see how this epistemological relativism explains Protagoras' engagement in rhetoric. He claims that there are two opposing λόγοι for each claim, and that he can teach the ability to make the weaker argument the stronger.[295] This seems at first to contradict Protagoras' claim that οὐκ ἔστιν ἀντιλέγειν, but an

[291] Plato, *Protagoras* 331c
[292] Ibid 331c
[293] Ibid 360e: Protagoras qualifies his assent to Socrates' conclusions with, 'on our agreed assumptions...'
[294] Plato, *Theaetetus* 171bc
[295] Aristotle, *Rhetoric* 1402a23

examination of these claims in the context of (M) will show that this is not the case. Recall that Protagoras thinks that there is no 'no man's land' between the private worlds in which absolute truths exist. Therefore, οὐκ ἔστιν ἀντιλέγειν.

However, when we have a conversation with someone else, we create a matrix from which new truths derive. Conversations are not concerned with the contents of only one of the participants' private worlds – they are the product of the private worlds of both participants. Thus, it is possible that there are two λόγοι for a particular matter: for example, Socrates thinks that justice=holiness; Protagoras disagrees. However, he may agree to the premise that justice=holiness for the purpose of the conversation. Like any matrix, the premises of the conversation generates results particular to that matrix, because the conclusions are not restricted to either Socrates' or Protagoras' private world.

Consequently, we see that (M) becomes something more than a relative truth: it works upon a different level of analysis to the statements it describes. If we see any framework from which a set of statements derive their truth – private worlds, conversations, or other kinds of argument - as a matrix, (M) is simply the rule that describes how truths are generated from each matrix. Therefore, if Socrates does not subscribe to (M), then '(M) is false' is true in Socrates' private world. However, in an analysis of Socratic thought from outside Socrates' private world (M) remains an accurate justification for the truth, '(M) is false.' To draw an analogy, the statement 'Socrates is free to say what he likes,' is compatible with the statement, 'Socrates must follow the rules of grammar,' even though the latter statement does prohibit Socrates from talking gibberish. Grammatical rules exist upon a different level of analysis to semantic rules. Likewise, statements about the way truth works are different to other kinds of statements: they are descriptions of how the private worlds work, rather than products of the private worlds. Hence, Protagoras has limited the principle of non-contradiction to operation within each matrix: although each argument should be consistent, the conclusions of each argument may contradict, because they are generated from different matrices.

Let us apply this to Protagoras' political theory. Protagoras' relativism leads him to assert that what a community believes is ethical *is* ethical for that community.[296] Therefore, the policy implications are that we should begin with the

[296] Plato, *Theaetetus* 172a

established norms and institutions and act with moderation.[297] In short, this is a policy of reform rather than revolution, a typically conservative approach. This is evident in the story of Protagoras' drawing up of the Constitution at Thurii, a city founded by the Athenians and their allies at a spring called Thuria, near Sybaris.[298] It is Pericles who sends a delegation to Thurii,[299] and he asks Protagoras to draw up the constitution for the colony.[300] The result is usually supposed to be evidence of Protagoras' conservatism, with which we shall concur, but we should note that our reasons for describing Protagoras' policy as conservative are very different from those traditionally given. Our reconstruction of this event is an example of why deconstruction of the claims of other historians is as important as reconstruction from the primary sources.

The common claim is that the Thurian constitution is (at least moderately) democratic, which exhibits conservatism, given that Protagoras has been commissioned by a democrat.[301] Although, frustratingly, the frequency of this claim is matched by the frequent failure to name the primary sources from which it is derived, we may find evidence for the democratic nature of Thurii in Diodorus of Sicily[302] and evidence for Pericles' (at least nominal) democratic sympathies in Plutarch. [303] The likelihood of the constitution being democratic in nature is supported by Protagoras' democratic leanings in Plato's Protagoras at 323a, where he asserts that the state could not exist if every man's opinion were not taken into account. However, what many historians fail to recognise is the fact that Diodorus of Sicily only describes the Thurian constitution as democratic after the conflict in Thurii between the Sybarites and the newer citizens, following which a democratic form of government is established: this occurs *after* Protagoras' expertise is employed.[304] The fact that this is in itself remarkable does seem to undermine the case that the colony had been democratic from the outset.

Therefore, we are left with no textual evidence for the extent to which the original (Protagorean) constitution is democratic: only speculation based upon the

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[297] Plato, *Protagoras* 323a
[298] Diodorus of Sicily, *Library of History* XII.10
[299] Plutarch, *Life of Pericles* 11
[300] Diogenes Laertius, *Lives* VIII.50
[301] Eg, Romilly [1992] p 214
[302] Diodorus of Sicily, *Library of History* XII.11
[303] Plutarch, *Life of Pericles* 9
[304] Diodorus of Sicily, *Library of History* XII.11

political sympathies of Pericles and Protagoras. Given Protagoras' claim that what a community believes is ethical *is* ethical for that community, we may not suppose that he would be willing to impose his own sympathies onto an alien community like Thurii. Indeed, the evidence suggests that Protagoras does contradict at least one of the *a priori* principles to which he subscribes: his agnosticism. We saw that Protagoras denies the possibility of absolute knowledge of the existence of the gods. However, unlike the case of the claim that the original Protagorean constitution is democratic, we do have textual evidence to support the claim that it includes established religious customs. Like many colonies, Thurii is founded according to the consultation of an oracle.[305] Diodorus of Sicily does tell us that the original constitution of the city reflects the mystical nature of the city's founding, at least insofar as the naming of the streets is concerned.[306] Moreover, Thurii's mystical reputation is evident in wider fifth century culture.[307]

Therefore, we may conclude that Protagoras' activities in Thurii do exhibit conservative tendencies, but not because the constitution is democratic, although we do not exclude the possibility that it is so. Rather, his willingness to begin his work from tenets to which he does not personally subscribe as a matter of universal truth illustrates his conviction that the purpose of politics is to build institutions upon existing traditions, not to indiscriminately adhere to an abstract ideal. As we saw at the beginning of this Chapter, this is a distinctly conservative approach.

Protagoras has recognised the limitations of νόμος: it does not carry universal worth, but derives its legitimacy from its endorsement by a particular society. In the absence of any one universally valid framework ensures that νόμος is not replaced by another, for example φύσις. In this way, Protagoras' relativism can be seen as the basis for his conservatism.

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[305] Diodorus of Sicily, *Library of History* XII.10: the location for the city is chosen according to Apollo's advice to found the city where there is 'water to drink in due measure, but bread to eat without measure.' The spring, Thuria, has a pipe which the natives call μέδιμνος, 'a measure of grain.'; Cf Greenidge [1896] Ch III

[306] Diodorus of Sicily, *Library of History* XII.10

[307] Aristophanes, *Clouds* 330-335; Sommerstein's note 39 to his translation of this [2002]. See Neil [1995] for an interesting take on the link between Protagoras, Thurii and mysticism.

Gorgias

Gorgias is often singled out as different from the other Sophists, either because of his refusal to teach ἀρετή as well as rhetoric,[308] or because he is sometimes not considered to be a Sophist at all. While it does seem clear that Gorgias does belong to this group,[309] we are more concerned with his role in the epistemological debate. His contribution can be found in his *Περί Φύσεως*.

The nature of *Περί Φύσεως* has been thought to be so absurd that its status has often been relegated to that of a parody. Although we shall be sympathetic to this claim, it has been used as an easy way to avoid problematic evidence for a particular argument. The term 'parody' is often used to denote the text's inconsequence, usually because *Περί Φύσεως* is problematic for the account that the person making this claim is trying to produce.[310] This is unacceptable, especially as the same people wish to use Gorgias' *Helen* as a serious text to support their arguments, though *Helen* itself admits that the author wrote it 'as an amusement for myself.'[311] That is not to say that *Helen* has nothing to teach us, but that there should be a strong justification for dismissing *Περί Φύσεως* and not *Helen*, especially as it is the latter, not the former, which explicitly admits itself to be an amusement.

Dodds[312] points out that neither Plato nor Aristotle took *Περί Φύσεως* seriously. However, this is inaccurate, as Aristotle acknowledges the need to refute Gorgias' arguments, which he does in *Metaphysics*;[313] and other sources, notably Isocrates,[314] certainly took Gorgias to be serious.

Having said this, we shall consider Guthrie's claims that *Περί Φύσεως* is a parody of Eleatic arguments, but it is a parody with a serious point to make: it shows that Eleatic arguments can be used to refute the very thing they claim to prove.[315] As this argument only properly deals with the first stage of *Περί Φύσεως*, and as the two surviving accounts of *Περί Φύσεως* are contradictory, and do not

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[308] Plato, *Meno* 95c
[309] Harrison [1964]; Cf Diodorus of Sicily, *Library of History* 53
[310] Dodds' *Introduction* in Plato, *Gorgias* [1959] p 8; Cf Gomperz, [1901] pp 481-490; Cf Robinson, [1973]. To be fair to Robinson, he does acknowledge that Gorgias describes *Helen* as a trifle, but decides to take its content seriously.
[311] In Waterfield, [2000] pp 228-231
[312] [1959] p 8
[313] Book Γ
[314] Isocrates, *Encomium of Helen* 3
[315] Guthrie, [1969] pp 194-199

wholly adhere to the Eleatic paradigm, we shall modify and expand upon Guthrie's claim. We shall show it to be representative of Gorgias' methodological critique of the Eleatics, and possibly Empedocles and Protagoras. As such, it shows him to be a relativist, and certainly should not be dismissed as unrepresentative of his views. We shall then examine the implications of this for Gorgias' methodology, concluding that it is relativistic, because claims must be qualified by reference to a framework. We shall then show how this culminates in Gorgias' political and moral theory.

Gorgias' *Περί Φύσεως* is a matrix: its conclusions are generated, and bound to, the premises within it. For this reason, we shall not assume that Gorgias believes any of the claims it contains unless we have independent evidence to support this. *Περί Φύσεως* contains three stages: the metaphysical, the epistemological and the linguistic. It claims that nothing *is*; if it *is*, it cannot be known and if it can be known, it cannot be communicated.[316] The first stage can be said to use the method discussed in Chapter Two by the contrast of opposing claims in conditional sentences. If Not-Being *is*, then Being, as its opposite, must not *be*, and *vice versa*. If being *is*, it must be either one or many; generated or unbegotten. Gorgias arrives at the conclusion, 'nothing *is*' because Being can neither be one nor many, generated nor begotten, so the attributes that Being must have if it is to exist are impossible. Therefore, Being cannot exist: nothing *is*, because:

> If some one of these is not, the opposites of these will have an existence.[317]

The use of terms such as 'one' and 'many' and concepts such as 'generated' and 'unbegotten', along with the method of contrasting opposing claims, suggests a refutation of Eleatic ideas using the Eleatic methodology:

> With respect, therefore, to his first dogma, that there is not any thing, having collected what has now been said by others concerning beings, he shows that their assertions have been contrary to each other. [318]

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[316] Ps-Aristotle, *On Melissus, Xenophanes and Gorgias* 979a-980b and Sextus Empiricus, *Against the Logicians* I 65-87
[317] Aristotle, *On Melissus, Xenophanes and Gorgias* 979
[318] Ibid 979

Using the same method that Parmenides uses to say that 'One *is*', Gorgias asserts that 'nothing *is*.'

Robinson and Guthrie would leave it here: for them, Stages Two and Three are similar attempts to refute Parmenides. They think that Gorgias is saying that the arguments Parmenides uses to prove that the One can be known and can be communicated can be used to prove the exact opposite. However, this interpretation ignores the fact that the third stage of the argument is conducted very differently to the first and second.[319] As we are interested in Gorgias' relativisation of the principle of non-contradiction, we should also note that the principle is used within this stage of the argument, but not as a means to absolute truth, because Stage Two begins with the antithesis to Stage One.

According to Sextus Empiricus, the second stage of *Περί Φύσεως* uses the same method of opposing claims to arrive at the conclusion, 'if anything exists, it is unknowable.' It contrasts, 'if things thought are not existent' with, 'if things thought are existent.' The first ὑποθέσις results in the conclusion that the existent cannot be known because, if the things thought are non-existent, the existent is not thought (because the existent is opposite to the non-existent).[320] The second ὑποθέσις results in the same conclusion, this time because if things thought are existent, the non-existent will not be thought; but the fact that we can think of non-existent things, like Scylla and Chimera, shows that the non-existent can be thought. Therefore, it is impossible to think of the things that exist, so the existent is unknowable.[321]

As it stands, this looks like another refutation of Parmenides' assertion that our thoughts must be of something that *is*.[322] The argument implies that, conversely, our thoughts must be of something that is not, because the ὑποθέσις 'things thought are existent' is said to be impossible. Again, using Parmenides' method of contrasting claims, Gorgias argues for the reverse of Parmenides' theory.

However, Ps-Aristotle's account of Stage Two does not portray Gorgias as using this method.[323] He reports Gorgias as beginning with the ὑποθέσις 'things

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[319] According to Sextus Empiricus. According to Ps-Aristotle, the second argument is also structurally different from the first.
[320] Sextus Empiricus, *Against the Logicians* I.77
[321] Ibid 80
[322] Plato, *Parmenides,* 132b-c; Cf Clement, *Miscellanies* II. As we decided in Chapter One, this is probably a literary device of Parmenides', but Gorgias need not have recognised this.
[323] Aristotle, *On Melissus, Xenophanes and Gorgias* 980

thought are existent', and pointing out the impossibility of this. However, the next ὑποθέσις is not the direct opposite of this: Gorgias goes on to investigate the ὑποθέσις, 'if some things we think are true and others false.' He concludes that, in this case, we may not distinguish the true from the false. It is not inconceivable that this is an attack on Protagoras' Measure Doctrine: for Protagoras, an individual's thoughts are infallible. However, according to Gorgias' Stage Two, we may not automatically claim verity for our perceptions. That Gorgais supports this outside the matrix of *Περί Φύσεως* is hinted in Plato's *Gorgias*.[324] Therefore, as Sextus Empiricus observes, Gorgias abolishes the 'criterion' in a different way to Protagoras.[325]

Both accounts of the Stage Three omit the use of the method of contradiction.[326] Gorgias says that, if things that are known are the objects of sensual apprehension, we must communicate through speech. Recall that, for Protagoras, the objects of mathematics are removed from the objects they describe. In the same way, for Gorgias, the objects of knowledge are removed from the words that describe them. There is an ontological gap between the object and a thought of it, similarly, there is an ontological gap between our thoughts and our words. Therefore, the word and the object can never be synonymous:

> Thus, just as the visible thing will not become audible, and *vice versa,* so too, since the existent subsists externally, it will not become our speech; and not being speech it will not be made clear to another person.[327]

In reaching this conclusion, Gorgias has noted that the visible cannot become the audible. Neither Aristotle nor Sextus Empiricus report Gorgias as using the Eleatic method, so it is conceivable that this Stage in *Περί Φύσεως* is directed against someone else. Gorgias' teacher Empedocles[328] also notes the difference between the audible and the visible (and the objects of the other senses):

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[324] Plato, *Gorgias* 454d
[325] Sextus Empiricus, *Against the Logicians* I.65
[326] Sextus Empiricus, *Against the Logicians* I.83-84 and Ps-Aristotle, *Against the Dogmas of Gorgias* 980a-b
[327] Sextus Empiricus, *Against the Logicians* I.83-84
[328] Diogenes Laertius, *Lives* VIII 58: Diogenes Laertius tells us that Gorgias is Empedocles' pupil, although Dodds, [1959] p 7, believes this to be untrustworthy.

> Empedocles says that perception occurs because something fits into the passages of the particular <sense organ>.For this reason the senses cannot discern one anothers [sic]objects, he holds, because the passages of some <of the sense organs> are too wide for the object, and those of others are too narrow. And consequently some <of these objects> hold their course through without contact, while others are quite unable to enter.[329]

This need to match the type of object to the type of perception is extended to Empedocles' theory of thought and ignorance:

> The one [understanding] is due to what is like; the other [ignorance] to what is unlike; since in his view thought is either identical with sense perception or very similar to it.[330]

Empedocles laments the fact that most men achieve a limited understanding through the evidence of their senses, but believes that clarity is possible if sensory evidence is used intelligently:

> Come then, with each of thy powers discern each manifest object,
> Putting no greater trust in the sight of the eye than hearing,
> Nor in the echoing ear above the clear witness of tongue's taste;
> Nor from the rest of the parts wherein are the channels of knowledge
> Hold thou back thy trust, but mark each manifestation.[331]

Empedocles means that, by the kind of observation and experiment discussed in Chapter One, we may overcome the problems of sense data. However, by an extension of Empedocles' own reasoning, Gorgias claims that the knowledge he professes to teach cannot be transferred to another person. If, as Empedocles argues, the objects of knowledge are the objects of sensual apprehension, then according to Empedocles' requirements, speech cannot communicate knowledge.[332]

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[329] Theophrastus, *On the Senses* 7; Cf Plato, *Meno* 76c; Cf Aristotle, *De Generatione et Corruptione* 325b

[330] Theophrastus *On the Senses* 9

[331] Sextus Empiricus, *Against the Logicians* I 125

[332] Guthrie [1969] agrees that Stage Three is based upon Empedocles' doctrine, but thinks that it supports him. The claim that it is a criticism of Empedocles' optimism belongs to this paper.

Gorgias points out that the two people having the conversation must also be in perfectly similar states of mind, which is impossible. In addition,

> ...it is impossible for the same thing to exist in several separate persons; for the one would be two.[333]

The result is a similar conclusion to the implications of Protagoras' private worlds theory: if knowledge is possible at all, insofar as it is knowledge, it cannot be transferred to another person. Even if reality exists independently of us, knowledge of that reality is relative to the individual doing the knowing.

There is no textual evidence to confirm that Stage Three is a direct attack upon Empedocles, but the circumstantial evidence is strong. Firstly, there is the fact that no alternative ὑποθέσις is offered in Stage Three of either of the surviving accounts, suggesting that the Eleatic method is not the only target here. Secondly, the ideas expressed do seem to be an extension of Empedocles' epistemology. Most strikingly, Empedocles is also known to have written a *Περί Φύσεως*,[334] so Gorgias' choice of the same title can be seen as his attempt to refute the theories proposed by his teacher.

We cannot dismiss the possibility that Stage Three should include an opposing ὑποθέσις, but that both Aristotle and Sextus Empiricus are inaccurate; nor should we ignore the fact that Parmenides' poem claims to be able to communicate truth, so Stage Three may be directed against this. Either way, Gorgias recognises the problem for Empedocles in communicating knowledge to make the argument at all, so we should bear this in mind.[335] Given evidence from Plato's *Phaedrus*, it is likely that Gorgias subscribes to Empedocles' physical doctrines as probabilities rather than absolute truths.[336] Certainly, *Περί Φύσεως* does seem to contain a warning

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[333] Ps –Aristotle *On Melissus, Xenophanes and Gorgias* 980b

[334] Diogenes Laertius, *Lives* VIII 77; although Melissus and Parmenides are also likely to have written treaties of the same name.

[335] Gomperz, [1901] p487, thinks that Gorgais is trying to defend Empedocles by attacking the Eleatics (although, unlike Guthrie, he does not mention the similarity between stage Three and Empedocles' doctrine). However, the problem with this and Guthrie's view is that it does not explain why Stage Three is structurally different, nor is it clear why Gorgias' extension of Empedocles' reasoning should be seen as a support for his theory, when the extension of Eleatic reasoning is taken as a condemnation. Moreover, if Dodds is correct, and Diogenes Laertius is erroneous in asserting that Gorgias is Empedocles' disciple, the motivation of Gorgias to support Empedocles disappears. Either way, the argument in this paper still stands.

[336] Plato, *Phaedrus* 267a

of the limitations of the methodology of the natural sciences discussed in Chapter One.

Let us now examine how *Περί Φύσεως* fits in to Gorgias' wider methodology. Περί Φύσεως may be seen as a parody with a serious point to make. It argues that the methods employed by certain thinkers may produce alternative conclusions that are equally true – or equally false. There is symmetry here with our observation in Chapter Two, that the method of contradiction may be used to demand the use of both continuous and discrete frameworks. This would explain why Aristotle and Isocrates take it seriously, and why each stage is structurally different. Gorgias does not have to commit himself to any of the conclusions, for example 'nothing *is*,' only to the claim that these conclusions follow when the methods and theories mentioned are applied. *Περί Φύσεως* is a matrix: it is an exercise to show that certain conclusions follow from particular ways of arguing. This allows Gorgias to refute Protagoras and Empedocles, even though he agrees with some of their theories elsewhere. Gorgias does not have to commit to the verity of any doctrines expressed here: he merely uses them to expose the fallacies of his predecessors.[337] Gorgias means to show the volatility of claims to knowledge.

Gorgias is a relativist. Like Protagoras, he makes use of the principle of non-contradiction within particular matrices, but denies that it may be used free of context to attain absolute truth. Bett[338] argues that *Περί Φύσεως* does not portray Gorgias to be a relativist, because it does not suggest that 'what *is*' is relative to a scheme, but that there is no such thing as 'what *is*.' However, given our analysis of *Περί Φύσεως*, Gorgias methodology does seem to be relativistic. We have just seen that, in fact, 'nothing *is*' is not Gorgias' point. We identified two ways of being relativistic in our section on Protagoras: saying that the truth is relative to the observer, or saying that the truth of a statement is relative to the matrix set out by the premises of the argument. Although the third stage includes the first kind of relativism, Gorgias' relativism in *Περί Φύσεως* as a whole is of the second kind. Even if 'nothing *is*', the statement, 'what *is* is unknowable' can be valid in relation to the framework defined by the ὑποθέσις 'something *is*.'

Robin Waterfield believes that Gorgias cannot be a relativist for the opposite reason to Bett: he thinks that Gorgias holds there to be a reality

[337] Isocrates, *Encomium of Helen* 1-3
[338] Bett [1989]

independent of appearance. He points to the fragment from Proclus, in which Gorgias says,

> Existence is unknown unless it acquires appearance, and appearance is feeble unless it acquires existence.[339]

Waterfield says that, if there is a gap between appearance and reality for Gorgias, he must hold that reality does exist, so he is not a relativist. We may also look at Gorgias' theories of the physical world for evidence that he holds that external reality has some existence.[340] However, this need not be the case. Guthrie[341] points out that this fragment is given no context, and the Greek could easily bear the translation, 'existence is unknown *for* it does not acquire appearance...' In addition, our observation that Gorgias sees physical theories as probabilities, not claims to truth, does amount to the kind of epistemological scepticism that would support a relativist account.

In the light of this, we should make a distinction between epistemological relativism and metaphysical relativism. As Gorgias himself argues in Περί Φύσεως, it is perfectly possible to admit that there is an independent reality without admitting that it can be known. Moreover, Gorgias does not have to concede that reality *is*, to make claims based upon premises that assume this. The truth of these claims is relative to the matrix built upon that premise. So, even if 'nothing *is*' is true, Gorgias is able to go on to make (he thinks) true claims in Stage Two, because there claims are based upon the premise 'something *is*'. Truth is derived from givens without having to commit to their truth.

This epistemological scepticism leads to epistemological relativism. Because absolute knowledge is impossible, there is no correct way of attaining it. Verity relies upon reference to a framework. Even if reality does exist, we may make true claims that contradict this, given that they follow logically from their premises. For someone like Socrates, who believes in absolute truths, it is possible to make claims about concepts like justice which apply in every context.[342] However,

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[339] Waterfield, [2000] p 240
[340] Theophrastus, *De Igne* 73 and Plato, *Meno* 76c
[341] [1969] p 199
[342] Plato, *Meno* 72ad

for Gorgias, it is impossible to make an unqualified true statement, which makes him a relativist.

Because of Gorgias' epistemological scepticism, he concerns his profession with the category of belief, not knowledge. Beliefs are open to persuasion, which is where the orator may exert his influence. Gorgias boasts of the ability to answer upon any question that might be asked, with the same confidence as one who knows.[343] Because the masses do not insist upon exactitude, and because of the impossibility of absolute truth, oratory appeals to probability rather than precision. In this way, the orator, the expert in persuasion, has the advantage over experts in other fields. The implications of this for moral and political theory are apparent when we consider that Gorgias places discussions of right and wrong within the realm of oratory.[344] The aim here is not truth, but 'the greatest good, which confers on everyone who possesses it the power of ruling his fellow citizens.'[345]

Although at first glance this appears to be similar to the political realist's assertion that politics is about power, it is in fact indicative of his conservatism. His conservatism lies in his use of the established channels and institutions to mould the accepted beliefs about right and wrong. This is comparable to Protagoras' comment that he may help men 'to become a real power in the city, both as a speaker and man of action.'[346] To strive to rule others is not necessarily political realism when that rule is exerted with respect for existing institutions. Every state requires rulers, but not every ruler is a political realist. The Greek political system demands that mass audiences are convinced, rather than the intellectual elite, as Socrates would prefer. Gorgias and Protagoras recognise this, and their consent to work within this system is evidence of their conservatism.[347] Gorgias' conviction that the best course of action is to enslave by consent, not by force,[348] and his concern for right action are also anathema to political realism.[349]

The reason for this conservatism is Gorgias' epistemological relativism. Because there is no absolute knowledge of right and wrong, we may only make

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[343] Plato, *Meno* bc; Cf Plato *Gorgais* 457b, 458e and 459c; Cf Plato, *Phaedrus* 267a
[344] Plato, *Gorgias* 454b
[345] Ibid 452d
[346] Plato, *Protagoras* 319a
[347] For Gorgias, see Plato, *Gorgias* 456ac and 459a Cf Homer, *Iliad* IX: Peleus wishes to make Achilles a 'speaker...and a man of action.' The rewards of this would be public opinion.
[348] Plato, *Philebus* 58b
[349] Plato, *Gorgias* 457bc

claims about morality with reference to a framework: consequently, it makes sense to begin from established norms. In this way, the rhetor must work on the premises given by the society in which he operates, without reference to universal values.

This would explain Gorgias' reluctance to teach ἀρετή, and his refusal to give absolute definitions for concepts such as virtue, as Plato's Socrates wishes to do. Instead, Gorgias chooses to enumerate the different kinds of virtue, indicating that he is working within the value system of the society of which he speaks.[350] In *Meno*, Socrates is exasperated with Meno's account of virtue (which he claims is identical with Gorgias', and which does seem to be in the same vein) because it simply lists different kinds of virtue without defining the trait that all acts of virtue have in common.[351] When Socrates and Meno do arrive at such a definition, it is dissociated with Gorgias by the use of a quote, possibly from Simonides, as the definition, not a quote from Gorgias.[352] The point is that, for Gorgias, there can be no absolute definitions.

In conclusion, we see that Gorgias' epistemological relativism forms a key part of the methodology which leads him to a conservative political theory, rather than a realist approach. His political theory relies upon the relativism derived from his reassessment of the principle of non-contradiction, and claims to absolute truth.

Euthydemus and Dionysodorus

The inclusion of Euthydemus and Dionysodorus in a chapter about political theorists is contentious, given the reluctance of others to take them seriously or even to acknowledge that they are serious themselves.[353] Dionysodorus' refusal to include knowledge of right and wrong in his teaching of the complete duties of a general seems at first to support this objection,[354] but in fact, it is this apparent amorality that makes their political views so relevant to us. For we are told that Euthydemus and

[350] Aristotle, *Politics* 1260a24-36
[351] Plato, *Meno* 71e-72e
[352] Ibid 77b. Although Socrates does ask for Gorgias' definition of virtue (76b), and asks Meno to respond 'a la Gorgias' (76c), he has previously acknowledged that Gorgias is not here to defend himself (71d). Therefore, it seems that Socrates and Meno are using Gorgias' examples to arrive at a definition to which Gorgias would not subscribe.
[353] See especially Romilly, [1992] Ch 1
[354] Xenophon, *Memorabilia, or Recollections of Socrates* III.1

Dionysodorus are seriously interested in logic, if not ethics and physics, and that they regard both the existent and the true as relative things.[355]

Notwithstanding the problems with Euthydemus and Dionysodorus, they are worth our attention. Our first task, therefore, will be to justify the use of Plato's *Euthydemus* as our main source for this section. We shall examine the claim that *Euthydemus* is an exposition of sophistic fallacy. Although we shall reject Mary Margaret McCabe's claim that Euthydemus and Dionysodorus follow the Heraclitean-Protagorean model, the diligence of her linguistic analysis shall be used to shape our account of their real intentions. We shall see that Euthydemus and Dionysodorus create the ultimate matrix in their eristic display: where the rules to be followed are those of language. We shall conclude that the relativist critique of conventional morality does not lead to its replacement by φύσις, but rather a conservative concession to work within νόμος.

Unfortunately, the main evidence we have concerning Euthydemus and Dionysodorus is Plato's dialogue, *Euthydemus*, which has been regarded as at least half a satire, with Euthydemus and Dionysodorus the 'two clowns' or 'the two-headed philosopher-comedian' as the targets.[356] It does seem that Plato is using the dialogue to distinguish between antilogic and eristic[357], or at least to make a point about fallacious methods of argument.[358] There is certainly an element of irony involved, for example, when Socrates imitates the common way of addressing a deity at 301d.

However, a similar example of Socratic irony in *Theatetus* is no reason to doubt Plato's account of Protagoras,[359] so this is not evidence that Plato has produced a distorted account of these men. Likewise, the use of fallacious arguments by Euthydemus and Dionysodorus is no reason to suppose that Plato's account is a parody – we may observe his disapproval of them through Socrates' responses, without having to conclude that Plato makes their arguments worse than they are. On the contrary, there is independent evidence to suggest that he replicates some of their arguments exactly.[360]

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[355] Sextus Empiricus, *Against the Logicians* I.64
[356] Chance,[1992] Introduction, Ch 1 and p 191
[357] Kerferd, [1981] Ch 6
[358] Romilly [1992] p 81; Chance [1992] Ch 3; [2000] p 277
[359] Plato, *Theaetetus* 171d Socrates suggests that Protagoras may appear, Orpheus-like, to make pronouncements.
[360] Aristotle, *Sophistical Refutations*, 179a

In the light of this, it seems reasonable to refer to the *Euthydemus* here, on the condition that evidence is gleaned via a detailed approach to the structure of the dialogue and the way in which Plato presents the speakers. The first thing to note is that Euthydemus and Dionysodorus are not putting forward an explicit doctrine in their display. As Dionysodorus tells Socrates at the beginning of Cleinias' conversation with Euthydemus,

> I may tell you beforehand, Socrates, that whichever way the boy answers he will be refuted.[361]

This is indicative of the approach to be taken throughout the display. In 275d-277c, 283b-288a and 293b-303a, where they are discussing knowledge, the impossibility of contradiction and the use of qualifiers respectively, the aim is not truth, but refutation. This makes a stark contrast to Socrates' aim at 277d-282d and 288e-293a, who (after correcting the fallacies of the Sophists) investigates knowledge and philosophy with a very different aim: to discover the truth. Therefore, we should not take the explicit claims made by Euthydemus and Dionysodorus as representative of their views: for example, when Dionysodorus says that everyone knows everything, if he really knows something,[362] he does not actually believe it, but he is using it as a premise for his next display. Therefore, it is the method of argument to which we should attend.

At first glance, it seems that Plato uses his dialogue to expose fallacious arguments used by sophists like Euthydemus and Dionysodorus. These include the fallacy of equivocation and the fallacy of *a dicto secundum quid ad dictum simpliciter*. The latter can be seen at 293a-293d, when Euthydemus argues that,

> Since it is impossible to be and not to be the same thing, if I know one thing I know absolutely everything - because I could not be both knowing and not knowing at the same time – and since I know everything, I also have this knowledge.[363]

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[361] Plato, *Euthydemus* 275e
[362] Ibid 294a
[363] Ibid 293d. It is Socrates' summary, but Euthydemus consents to it at 293e.

Aristotle describes this kind of fallacy in *Sophistical Refutations* and *Rhetoric*, linking Euthydemus with the mistake.[364] The fallacy also flourishes if the opponent subscribes to the idea that what is true of the parts is true of the whole, because a statement about part of Socrates' knowledge should be true of it as a whole.

The fallacy of equivocation occurs on the words 'learn' and 'wise' and εἶναι.[365] This is where the argument depends upon a shift in meaning in the use of a particular word. Euthydemus asks Cleinias if it is the wise or the ignorant who learn, but when Cleinias answers that it is the wise, Euthydemus points out that you learn what you do not know – so it is the ignorant who learn.[366] However, Dionysodorus says that it is the wise who learn, given that Cleinias says that the wise boys in his class learned the dictation, not the ignorant.[367] A similar exchange takes place concerning the question of whether one learns what one knows or what one does not know.[368] As Socrates points out, the fallacy lies in a shift in meaning of the words:

> ...people use the word 'learn' not only in the situation in which a person who has no knowledge of a thing in the beginning acquires it later, but also when he who has this knowledge already uses it to inspect the same thing...(As a matter of fact, people call the latter 'understand,' rather than 'learn,' μανθάνειν, but they do sometimes call it learn as well.)...There was something similar in the second question, when they asked you whether people learn what they know or what they do not know.[369]

There is also equivocation on εἶναι. At 283b-d, Dionysodorus infuriates Ctesippus by saying that, if he and Socrates wish Ctesippus' beloved, Cleinias, to become wise, they wish him to perish, because, 'you wish him no longer to be what he is now.'[370] The fallacy is that the sense of εἶναι has shifted from the copulative ('to be ignorant') to the existential ('to exist').

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[364] Aristotle, *Sophistical Refutations* 166b-179a and *Rhetoric*1401a
[365] Sprague, in her notes to her translation of *Euthydemus* [1993] argues that it must also accompany the fallacy of composition/accident at 298d-299a: the sense of the word 'your' shifts from ownership to blood relationship.
[366] Plato, *Euthydemus* 275d-276b
[367] Ibid 276c
[368] Ibid 276d-277d
[369] Ibid 277e-278b
[370] Ibid 283d

This seems to be an adequate account of Plato's exploration of the fallacies used by Euthydemus and Dionysodorus, but McCabe has produced a meticulous alternative.[371] She points out that, in dialectical contexts, fallacies are theory-bound: arguments are rooted in metaphysical assumptions. For example, the violation of the law of non-contradiction is only a fallacy if the law of non-contradiction is taken to be true. She suggests that Euthydemus' and Dionysodorus' arguments deny the metaphysical assumptions that generate the fallacies, because she ascribes to them the 'episodic view' of reality. She refers to the testimonia for Euthydemus in Plato's *Cratylus*:

> ...everything always has every attribute simultaneously.[372]

McCabe thinks that this, which she quotes as, 'everything is in exactly the same way for everyone at the same time and always,'[373] would bear the translation, 'at any moment, everything is in exactly the same way for anyone at the same time.'[374] This takes ἀεί as a quantifier rather than the description of a period of time, substituting 'always,' with 'at any one time' (although, as we shall see, it can also mean, 'over and over.'[375]) McCabe thinks that this is justifiable if we ascribe to Euthydemus and Dionysodorus the Heraclitean ontology of *Theaetetus* 152d, which links the subjectivist doctrine of substance possessing opposing properties with the doctrine of flux.

For McCabe, Euthydemus and Dionysodorus also accept the view that she ascribes to Protagoras: the idea that everything consists of discrete moments, between which there is no continuation. Here, time consists of the discrete parts of Zeno's Arrow paradox, with no continuity between them. This would certainly explain Dionysodorus' frustration at Socrates' expectation of consistency between arguments,[376] and why Euthydemus and Socrates disagree about whether to use the word 'always' to qualify the statements about knowledge.[377] The implications of this are that Euthydemus and Dionysodorus must deny that the distinction between verb

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[371] McCabe [1994]
[372] Plato, *Cratylus* 386d
[373] McCabe [1994] p 88
[374] Ibid p 89
[375] See the section on Antiphon.
[376] Plato, *Euthydemus* 287b
[377] Ibid 296a-b

tenses have any meaning. We shall see that McCabe is correct in asserting that the arguments are more economically explained as carelessness with tenses than with equivocation, but we shall suggest that her idea about an underlying physical doctrine lacks support.

Let us examine McCabe's argument about Euthydemus' and Dionysodorus' disregard of the strict use of tenses. In the discussion about knowledge at 275d-277c, Cleinias fails to recognise the distinction between the present or imperfect meaning of μανθάνειν and the aorist or perfect meaning of the verb. McCabe's point is that the incomplete action of coming to know is confused with the complete action of understanding. In the argument about being and becoming (283c-d), contrasts between the perfect and imperfect of γίγνομαι can only be made if it is admitted that time persists. Finally, in the discussion about Socrates' knowledge (295e-296d) the use of ἀεί as a quantifier, McCabe suggests, would also point to subscription to the episodic view.

An examination of the text shows that McCabe is correct: Cleinias does indeed fail to make the distinction between the complete and incomplete action. It seems that McCabe's explanation is more economical than the explanations involving a series of different types of fallacies, because it provides one rule that applies to every stage of the dialogue, as opposed to explaining different arguments with different fallacy types. It also has the advantage of not relying upon Aristotelian fallacy types to explain a Platonic dialogue. However, there is no textual evidence to link Euthydemus and Dionysodorus to the metaphysical doctrine she describes, and her argument becomes further undermined when we consider our rejection of Protagoras as a Heraclitean (an argument to which McCabe frequently refers) at the beginning of this Chapter. The passage from *Cratylus* certainly seems to link Euthydemus to a similar type of subjectivism to Heraclitus, but there is no need to go one step further and ascribe to him the episodic view: Euthydemus may simply say that opposing properties exist simultaneously without dividing existence into discrete parts. Moreover, the passage from *Cratylus* that McCabe uses to link Euthydemus' doctrine with discontinuity treats Protagoras' and Euthydemus' doctrines as distinct:

> But if neither is right, if it isn't the case that everything always has every attribute simultaneously *OR* that each thing has a being or

> essence privately for each person, then it is clear that things have some fixed being or essence of their own.[378] [Emphasis added]

It seems clear that Euthydemus' metaphysical doctrine simply rejects the idea of a thing having determinate properties (we have no evidence that Euthydemus denies the existence of substances, only the determinacy of their properties). However, he has little to say about the persistence of time, and this subjectivist view, that substance instantiates opposing properties, is compatible with both a continuous and a discrete view of time. The latter, McCabe's interpretation, relies upon the equation of subjectivism with flux and flux with indeterminacy,[379] which may be philosophically coherent, but is not a philosophical necessity. In view of the lack of textual evidence connecting Euthydemus with such a claim, McCabe's economy of argument in her linguistic analysis is negated by the philosophical basis it demands.

To salvage this, we may note that the subjectivist view allows us to ascribe contradicting properties to the same object. More than this, it holds that substance instantiates opposing properties simultaneously, so whether we take ἀεί to mean 'always' or 'at any one moment,' time is irrelevant. This would explain Euthydemus' and Dionysodorus' disregard for the distinction between tenses. It would also explain why, although they use the principle of non-contradiction in their individual displays,[380] the display as a whole rests upon the assumption that any answer can be refuted by the proof of its opposite.[381]

Unlike in the case of mathematical proofs, which use 'proof by contradiction' to attain absolute truth, Euthydemus and Dionysodorus' method of contradiction seeks to refute the absolute verity of any statement by proving the verity of its opposite. Because of their metaphysical subjectivism, we have epistemological scepticism: nothing can be known absolutely, because its opposite

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[378] Ibid 386de
[379] McCabe [1994] p 90
[380] Plato, *Euthydemus* 283d: Socrates wishes Cleinias dead as he wishes him not to be what he is; and it is impossible for Cleinias both to be and not to be. Cf Plato, 23df: it is impossible to be both knowing and not knowing at the same time. Cf 275d: Cleinias is offered no middle ground in the question of whether it is the wise or the ignorant who learn.
[381] Plato, *Euthydemus* 275e and 276d

is also true. Either can be proved by beginning from different premises.[382] Therefore, all truths are relative to a framework.

Our analysis of Euthydemus and Dionysodorus benefits from our observations about Protagoras and Gorgias. Let us recall Protagoras' point that truths within the matrix of a debate may be different to the justification for that debate or the way the debate is run. Although Euthydemus and Dionysodorus use the principle of non-contradiction within each display, they conduct the show as a whole on the assumption that opposing claims are equally true.

We shall also recall Gorgias' point that language may be distinct from the world it claims to represent. Language is distinct from the real world, so when we are in an eristic display, the only rules we need follow are those of language: we do not need to believe that the claims we make are absolutely true, only that they follow from the premises we have given. This is a more radical claim than we have encountered before, because claims do not even have to make philosophical sense: they need only be linguistically correct.

Note that this approach, although based upon a radical epistemological scepticism, is quite conservative in its method of attack. It works within the existing framework of language rather than seeking to replace it. This is a similar concern for Protagoras, who is far more interested in classifying the existing language than in inventing new terminology for his theories, which Socrates suggests might be necessary in *Theaetetus*.[383] Therefore, while we should hesitate to call Euthydemus and Dionysodorus political theorists as such, they certainly provide a critique of νόμος, without providing an alternative. Their willingness to engage with the accepted wisdom on its own terms at least shows an acknowledgement of its importance.

In conclusion, we have seen that the relativists of this chapter produce a critique of νόμος through a limitation of the principle of non-contradiction to operation within, but not between, particular matrices. The method of proof by contradiction is useless in attaining absolute truth. In the absence of an absolute framework, we must create our own truths, derived from accepted premises and

[382] Eg, learners learn what they do not know (276a), as opposed to knowledge requires understanding (276c)
[383] Plato, *Theaetetus* 183b

made public by accepted channels. In this way, a relativist position is historically and necessarily linked to a conservative political theory.

Chapter Four: The Political Realists

Our final thinkers, the political realists, violate the very principle upon which the relativists base their theories: they begin from the assumption that there is a knowable external reality. We shall see that there is a great divide between the relativists and the political realists, and that we are in no sense justified in saying that moral relativism may be used as a basis for political realism. As discussed in the Introduction, differences in political theory between the early and the radical Sophists are much better accounted for by an examination of their respective methodologies; this will explain why the relativists are conservatives, not political realists. Any difference in political theory by those thinkers who use the same methodology is minor, and may be accounted for by an examination of the application of that methodology to the material.

The thinkers in this Chapter embrace a growing respect for evidence grounded in actuality, which is important for our analysis of the methods of the political realists. It would be inaccurate and superficial to suggest that the methodology of the political realists is that of the natural sciences, whereas that of the relativists is a modification of that of mathematics. As we shall see, we may legitimately draw comparisons between Antiphon's methodology in this mathematics, natural science and political theory. In addition, we certainly do not wish to say that Greek mathematics is limited to proof by contradiction. However, we should make the distinction between those methodologies that make use of the abstract and the impossible and those that are grounded in the actual. We shall see that this justifies our focus upon the methodologies of the thinkers, rather than their theories, as it has greater explanatory power.

Antiphon

Antiphon is not a political realist, but his political theory represents an important shift in methodology from the thinkers of the previous chapter.[384] We

[384] We shall treat Antiphon the Sophist, author of *On Truth* and *On Concord* and Antiphon of Ramnus as the same person. Plato implies this when he identifies Antiphon the Rhamnusian as a teacher of Rhetoric (*Menexenus* 236a). Moreover, as Morrison [1961] points out Aristotle does not distinguish between the Antiphons of *Eudemian Ethics* (1232b7), *The Athenian Constitution* (s.32) and *Physics* (185a and 193a). Hermogenes doubts Plato, because Didymus the grammarian suggests

shall examine Antiphon's methodology, noting the difference between it and that of previous thinkers. We shall then see how this methodology produces a theory that not only challenges νόμος, but sanctions φύσις as a suitable replacement for it. It is this step, forbidden by the methodology of the relativists, which paves the way for political realism.

Antiphon does not begin his enquiries from the principle of non-contradiction: his is an empirical methodology. He believes that inquiries must begin from a good starting point.[385] Then, a picture is gradually built up by adding new pieces of information. The emphasis here is very much upon each stage of the methodology producing evidence that appeals to the senses as well as the intellect: Antiphon does not begin with an abstract ὑποθέσις, but physically demonstrable statements.

An examination of Antiphon's approach to mathematics will illustrate this. His attempt to square the circle is typical of his empirical approach.[386] He begins with a square drawn into a circle and adds two lines that cross the centre of the circle so that each side of the square is split in half. Then he connects each place where a line meets the circumference of the circle to make an octagon. Lines bisecting each side of the octagon are drawn through the centre of the circle and the points where each line meets the circumference are connected to make a polygon inside the circle. Taking ἀεί to mean 'over and over,'[387] this process is repeated, resulting in a progressive exhaustion of the circle. The idea behind this method is that it strives towards the construction of a polygon that coincides with the circumference of the circle so, as a square may be constructed equal to any given polygon, a square is being constructed to the circle.[388]

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that there were many Antiphons, and the style of *On Truth* is very different from the other works (Hermogenes, *On Types of Style* 399-401). However, this is the only evidence we have for treating Antiphon as two separate people, and diversity of style is a poor reason, as it is perfectly possible for the same person to use many different styles. Hermogenes is justified in treating the works separately as he is discussing different types of style, but we must consider them to be written by the same person.

[385] Harpocration, *Lexeis* Δ 42 Διάθεσις

[386] Aristotle, *Physics* 185a. See Wasserstein [1959] for reconstruction of method.

[387] Compare this, Wasserstein's, translation of ἀεί with McCabe's in the context of *Cratylus*, Chapter Three.

[388] Cf Euclid, *Elements* II.14: 'to construct a square equal to a given rectilineal figure.' Antiphon violates the law that was later embodied in Euclid III.16, which states that a straight line cannot coincide with the circumference of a circle: contact takes place at a point. Although Antiphon has been criticised for his failure to recognise this, his approach is not entirely redundant. Heath [1960] argues convincingly that his method is an important prelude to the method of exhaustion later

This method is enormously different from the method of proof by contradiction used in the discovery of incommensurables, and the method used by the sceptics, which relativises the method of contradiction according to different frameworks. The method of contradiction begins from the opposing ὑποθέσις of what is to be proved, seeking to prove its claim because its opposite is impossible. The evidence of the empirical method is composed purely of demonstrable statements. Although it is not a physical experiment, it is a move away from the abstract towards the sensually demonstrable: we *see* the area of the circle being increasingly exhausted.

Recall Ps-Hippocrates' criticism of the Eleatic use of opposites, that it excludes the use of more than one explanation for a phenomenon. In Chapter Three, we saw that Protagoras' criticism of the Eleatic method was different from this, as it lamented the absence of qualifiers in Eleatic methodology. However, Antiphon's method has more in common with the Hippocratic than the Protagorean. He shares with Ps-Hippocrates the concession that, rather than attaining truth straight away, it is better to build up a picture of the truth based upon the demonstrable, not the hypothetical. In addition, Ps-Hippocrates' *The Science of Medicine* asserts that science is based on fact, and that proof that rests upon the supposition of the non-existent is absurd,

> For what being could anyone ascribe to a non-existent thing as a proof of its existence?[389]

In each inquiry, Antiphon believes that we must strip away the intangible to reveal the actual. So as we saw, each step in his mathematical investigation is based upon something that can be observed, such as the addition of a new polygon. His approach to the natural sciences is similar: he bases his investigation upon what actually *is*, rather than the words that we ascribe to reality. The fact that something has a particular description attached to it does not change what it is: we may call a

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developed by Eudoxus, which builds upon Antiphon's treatment of the circle as the limit of the inscribed polygon.

[389] Ps-Hippocrates, *The Science of Medicine* p 139 For Galen's comparison of the two thinkers, see Sprague [2001] p 212-213

bed by that name, but it is primarily wood; it would sprout more wood, and not another bed, if it grew.[390]

Antiphon refers to what he believes is an existent external reality to support his case. The starting point for his political theory is also the actual rather than the abstract: his critique of νόμος concentrates upon its violation of φύσις, rather than upon the analysis of concepts that are not attached to the actual world.[391] For Antiphon, νόμος depends upon opinion and it is injurious to be seen violating it. However, whether one is seen or not, equally bad is to

> ...strain any of the innate principles of nature more than it can bear...for the injury does not depend upon opinion but on fact.[392]

This conviction that the principles of φύσις are more real than those of νόμος is the great difference between Antiphon and the relativists. While the relativists are happy to put forward a critique of conventional morality, they cannot present an alternative to it, as their relativism forbids the absolute validation of any other framework. This forces them into a conservative approach to politics. Antiphon, on the other hand, may put forward φύσις as an alternative, because his methodology begins from a starting point that may be observed in the actual world (in this case, the reality of φύσις), and each subsequent step must be based upon facts that are observable in actuality (for example, man's wish for happiness). Antiphon dose not suggest that νόμος is overthrown, but the challenge from φύσις is clear:

> ...justice consists in not transgressing any of the ordinances of the state of which one is a citizen. A man would therefore exercise justice with most advantage to himself if in the presence of witnesses

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[390] Simplicius, *On Aristotle's Physics 2* 283, 17-22; Cf Galen, *Glossary of Hippocratic Terminology* in Spragus [2001] p 214: Antiphon teaches the best way to coin new words. Antiphon is concerned that we should not be deceived by language; words should always match up to the reality that they describe. This is another similarity between Antiphon and Ps-Hippocrates in *The Science of Medicine* p 140: 'It is absurd to suppose that forms spring from names; that were impossible since names are adopted by convention, whereas forms are not invented but are characteristic of those things from which they spring.'

[391] Antiphon in *The Oxyrnchus Papyri* 1364: barbarians are no different from Greeks, any distinction is merely conventional.

[392] Ibid 1364

> he held in esteem the laws, but in the absence of witnesses, the precepts of nature.[393]

Antiphon shares with the political realists the wish to look beyond the habitual acceptance of conventional morality to reveal the actuality, but he is not a political realist. Antiphon is not interested in the rule of the stronger party or power politics, but in the necessary steps one must take to live the good life. Through an exposition of νόμος, his theory aims to describe a life lived in harmony with the principles of φύσις. His criticism of νόμος is concerned with its impotence: the law does not prevent the injured from being harmed, and in this way it is no more favourable to the injured than the aggressor. The supposedly just act of giving testimony at trial may result in harming someone who has done the testifier no harm, 'and there is a probability that he may subsequently be wronged.'[394]

It is folly to prioritise ideals that cannot be supported by observation above demonstrable requirements for the good life. Antiphon tells Socrates,

> I think you are a good man, but I can't say much for your wisdom. If you thought your teaching was valuable, you would ask for payment. You're good because you don't cheat people, but not wise because your knowledge is not worth anything.[395]

Antiphon cannot understand why Socrates will not indulge in the pleasures of taking money, or acquiring shoes, new clothes or expensive food, all of which he could attain by charging for his philosophical insights. To Antiphon, these pleasures are in accordance with φύσις, and therefore more real than the philosophy that Socrates would have to trade.[396] This represents a marked contrast to the relativists. From the starting point of observations of human needs and inclinations, Antiphon is able to produce a theory of human nature. The relativists, due to their rejection of any one framework as an absolute starting point, are unable to do this.

For Antiphon, who wishes to provide us with an account of the good life, it is φύσις that defines man's needs. The purpose of dividing the actual into φύσις and

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[393] Ibid 1364
[394] Ibid 1797
[395] Xenophon, *Memorabilia, or Recollections of Socrates* I.6 p 34
[396] John of Stobi in Sprague [2001] p 227: Antiphon does not endorse unrestrained hedonism, but calls for consideration and discipline.

νόμος is to enable us to measure the success of human laws in creating the conditions in which man may flourish. Consequently φύσις is a yardstick for νόμος. Antiphon's divergence from the relativists is clear. He wishes to attain absolute, not relative, truth so non-contradiction within a particular framework is insufficient; the framework must be that of the actual world. Underlying the νόμος is the universal order of φύσις. There *is* a good way to live; and consistency is ineffective unless it is in accordance with the principles of φύσις.

Thrasymachus

Thrasymachus is the first true political realist whom we are to examine. We shall see that Thrasymachus' methodology is more similar to that of Antiphon than that of the relativists, and that he also proposes φύσις as a rival to νόμος. Due to the fact that the majority of our evidence for Thrasymachus is contained in *Republic*, our first task should be to justify our use of it here. Next, we shall examine Thrasymachus' methodology as one akin to the model followed by the natural sciences, and illustrate how this leads to the development of his political realism.

Plato has been charged with intellectual dishonesty in Book One of *Republic*. His dialogue is supposed to be unfair to Thrasymachus because Plato uses *ad hominem* to discredit him and because Plato lets Socrates win the argument too easily. We shall briefly consider this charge, as Book One of *Republic* is to be our main source of evidence for Thrasymachus.

Firstly, Plato's use of *ad hominem* is said to be deceitful and hypocritical, as *ad hominem* is a form of rhetoric, which Plato is largely supposed to dislike. Thrasymachus is portrayed as ignorant and rude, bursting upon everyone 'like a wild beast, as if he wanted to tear us in pieces.'[397] However, we should not conclude from this that Plato's account is inaccurate: the purpose of writing, for Plato, is not to present *a prori* accounts, but to record and remember.[398] It is usual for Plato to record personal details of the characters in his dialogues: he even tells us that Socrates is rather ugly, like a stingray.[399] This is not a covert *ad hominem* attack upon Socrates, to encourage prejudice against him, merely a record of a particular

[397] Plato, *The Republic* 336b
[398] Plato *Phaedrus* 274-276; Cf *Seventh Letter* 344
[399] Plato, *Meno* 80a

feature of Socrates. In the same way, Plato's portrayal of Thrasymachus' character is explicit enough for the reader to be able to separate Thrasymachus' argument from his personality. It is up to us to decide whether we allow Thrasymachus' rudeness to influence our account of his theory.

It is also said that Plato allows Socrates to win too easily. For example, Thrasymachus accepts Socrates' premise that justice is an excellence of the soul, when he need not.[400] Moreover, Socrates' analogy of justice as a skill at 349a-350c is deceptive, as the just man and the unjust man are not competing for the same things, as Socrates' analogy suggests. Thrasymachus need not have consented to the analogy. Again, in the absence of textual evidence to the contrary, it is difficult to conclude that Plato misrepresents Thrasymachus here. Socrates admits himself at the end of Book One that the argument is failing,[401] so Plato does not wish to present the argument so far as flawless. In view of Plato's belief that writing is inferior to spoken dialectic, and is useful only to record, perhaps we should take this as an indicator that Thrasymachus is being recorded as he really is: a poor debater.

This is supported by the fact that Cleitophon interrupts Polemarchus and Socrates, with the objection that their accusation that Thrasymachus is inconsistent is unfair, because they fail to make the distinction between what the stronger party thinks and what it says.[402] The fact that it is not Thrasymachus who says this, but that the point is made nevertheless, suggests that Plato is trying to tell us that Socrates is being rather hard on Thrasymachus, but that Thrasymachus is not astute enough to pick up on this. In anticipation of the objection that Cleitophon is a supporter of Thrasymachus, so he is not really trying to be objective, we should note that the idea that Cleitophon is a supporter of Thrasymashus arises from the dialogue *Cleitophon*. Assuming that this dialogue is written by Plato,[403] both dialogues show Cleitophon to be more concerned with fairness of argument than with supporting a particular doctrine: in *Republic*, Cleitophon picks up upon

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[400] Plato, *The Republic* 353e
[401] Plato, *The Republic* 354b
[402] Ibid 340ab
[403] The reasons for doubting this are twofold: stylistic and lexical analysis, which are beyond the scope of the present study, and the fact that the dialogue ends with Socrates' account apparently discredited - see Bury's introduction to *Cleitophon* [1929]. The latter is hardly a creditable reason to doubt that Plato is not the author, given that *Parmenides* and *Meno* also shows Socrates to be defeated in argument and ends with his admission that he is unhappy with his own account respectively.

Socrates' and Polemarchus' unfairness and in *Cleitophon*, he considers turning to Thrasymachus because of the inadequacies of Socrates' account.[404]

Thrasymachus' methodology is more closely related to that of Antiphon than the relativists. Like Antiphon, Thrasymachus wishes to strip away the fallacies of conventional morality to reveal the actuality. The conventional view of justice is set out for us by Plato in *Republic*:

> ...to give every man his due...to benefit ones friends and harm ones enemies...[405]

Socrates is unhappy with this definition, as he believes that it is never right to harm anyone.[406] Thrasymachus is also unhappy. He is impatient with the discussion, angry with Socrates for seeming to ask questions of everybody else without providing any answers, and eager to share his own conception of justice:

> ...justice or right is simply what is in the interest of the stronger party.[407]

This is our first encounter of true political realism so far: it is an analysis of the political situation in terms of the power relationships between the political entities, without reference to moral ideals. Thrasymachus says that the rules are made by those who have the capacity to implement their own will; everyone else must submit to the stronger party. He explains that in each different type of government, power is in the hands of the ruling class, and each government makes laws that are in its own interest; so a democracy will make democratic laws, a tyranny will make tyrannical laws and so on.[408]

A closer examination of this will reveal Thrasymachus' rejection of νόμος in favour of φύσις, and his kinship with the methods of Antiphon and the natural sciences. We see that he shares with these the preference for actuality over theory: his definition of justice is presented as the simple truth, stripped away of the intangible moral absolutes that divorce theory from reality.

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[404] Plato, *Cleitophon* 410d
[405] Plato, *The Republic* 331e, 332d
[406] Ibid 335e
[407] Ibid 338c
[408] Ibid 338d-339a

The view that we are talking about is sometimes described as 'Might is Right.' This may be a neat sound bite, but actually it is quite unhelpful, and even misleading. It implies that the proponent of the theory equates strength with moral superiority, which is not the case here. The argument that Thrasymachus is making is concerned with the way in which meaning is ascribed to words; he is not concerned with whether the rules of power politics are good or bad. This is evident from his description of what happens to those who deviate from the law. They are

> ...punished as a lawbreaker and wrongdoer.[409]

Note that Thrasymachus does not commit to saying that the guilty party *is* a lawbreaker and a wrongdoer, only that he is punished as such, a clear indication that Thrasymachus is neither praising nor condemning the system. He is simply pointing out that it is those who make the laws who define the moral code, a nominal approach. This is consistent with Thrasymachus' wish to uncover the fallacies of conventional morality to expose the actuality.

The dialogue becomes more complicated when Thrasymachus praises injustice. Seemingly contradicting himself, he says that '...the just man always comes off worse than the unjust.'[410] The problem for Thrasymachus is that, if justice is in the interests of the stronger party, then this means that the unjust ruler (ie, he who rules for another's good) is better off than the just ruler (ie, he who rules for his own good). However, we should consider Thrasymachus' use of the traditional conception of justice, alongside his own. When he refers to justice as a code of moral behaviour, he uses the definition that he says is more real – the interests of the stronger. However, in order to demonstrate the truth of this, he exposes the fallacy of the traditional meaning, which he uses when he speaks of the individual's actions. This reading is supported by the fact that Adeimantus and Glaucon use the traditional meaning to apply to the individual's actions when they restate the case for injustice. This is unfortunate, because Thrasymachus actually does wish to say that the rules of justice are the same for the individual as for the state, merely on a smaller scale. The just man is he who is just by the traditional meaning of the word

[409] Ibid 339a
[410] Ibid 343d

(so the unjust man is actually better off), but what is called justice actually amounts to the interests of the stronger party.

We should note how different Thrasymachus' theory is from the conservatism of the relativists. Thrasymachus makes the point that, as a shepherd looks after his sheep for profit, a ruler wishes to rule for his own personal profit.[411] When we recall Gorgias' and Protagoras' conceptions of ruling, we see the difference in meaning. What Gorgias and Protagoras have in mind is more of an engagement in the political community, following the established laws and channels to become part of the policy process and to help to shape the community of which one is a part. The interests of the ruler and the body politic are identical. The idea that participation in the political process is a part of the good life is common in Greek thought, because it is usual to view the state as a natural entity. However, we should not assume that each expression of this ideal means the same thing.[412] Unlike Gorgias, Thrasymachus sees the ruler as distinct from the body politic, just as the interest of the shepherd is distinct from that of the sheep; he has a separate interest that he is keen to force onto others. Thus, Thrasymachus' conception of ruling involves a divided community.

The difference is due to the fact that, for a relativist, there is nothing more real than the νόμος upon which existing laws are built. This is not because νόμος is correct, but because we cannot verify any particular framework above another, so we must work with the one we have. For Thrasymachus, however, there is something more real than νόμος. Φύσις, the natural order, is available for consultation if we look beyond the ruse of convention. Throughout his speech at 343b-344c, Thrasymachus is concerned with looking at actual behaviour as it is, regardless of the names we give to it. For him, tyranny is the same as plunder, but it is not treated as such because convention ascribes to it a different name.[413] This focus upon the reality behind the name is reminiscent of Antiphon's treatment of matter in his physical inquiries, discussed above.

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[411] Ibid 343a-344c

[412] Cf Aristotle *Politics* 1253a-1252b, in which the state is described as natural, and man's nature is said to be political; Cf Plato, *The Republic*, in which philosophy is the highest good, and the rulers are philosophers.

[413] Plato, *The Republic* 344ab; Cf Thrasymachus' speech in Dionysius of Halicarnassus, *Demosthenes* 3

There is no room for the thought experiment in this theory.[414] Thrasymachus uses observation of φύσις, the natural order, to build a theory of human nature. He looks at the actual behaviour of the shepherd, not the hypothetical. The resulting theory is that man acts in his own interests. Νόμος is simply the result of this, and through the examination of φύσις, we may see the conventional morality for what it truly is. This forms the crux of his political realism. Observable facts of human behaviour take priority over indiscernible philosophical theories that derive from thought experiment. In this way, Thrasymachus' sympathy with the methodology of the natural sciences would forbid him from becoming a relativist, just as the relativists' distrust of reality forbid them from becoming political realists.

Callicles

Callicles[415] is also a political realist. We shall examine how his attention to φύσις leads to a political realism that combines a theory of the good life and a theory of power. This theory is the result of a methodology that is firmly rooted in the empirical tradition, a rejection of the abstract branches of philosophy.

Callicles has little time for philosophy. He thinks that it is a suitable subject for the young, but when pursued beyond a certain age, it prevents men from attaining the experience necessary to lead a respectable life.[416] The conceptual analysis in which Socrates engages, and in which we saw the relativists engage, is worthless in itself. This kind of philosophy is merely part of the process through which one must go before reaching adulthood, rather like a child learning to articulate must go through a phase of stammering. What matters is knowledge of the laws and languages of the city, business, and human pleasures and passions; in short, 'how others behave.'[417] The emphasis for Callicles is upon experience, rather than

[414] Note that Glaucon, not Thrasymachus, uses the closest thing to a thought experiment in the case for injustice: 'what would happen if the just man and the unjust man wore Gyges' ring?' *Republic* 359c-361a

[415] We have already discussed Romilly's [1992] rejection of the evidence about Callicles on the grounds that he is not a Sophist in the Introduction. Grote [1851], Chapter 67, similarly omits Callicles from his consideration. We decided to consider the most relevant thinkers regardless of their status as Sophists, but we should note that there is little evidence outside Plato for Callicles' existence. Nevertheless, in Callicles, Plato presents a detailed study of a political realist that makes our attention worthwhile.

[416] Plato, Gorgias 484c-485e

[417] Ibid 484d

conceptual analysis. As a result, he prefers to use observations of actual behaviour in the animal and human world as proof for his theories.[418]

This focus upon the actual rather than the conceptual is a consistent theme among the thinkers of this Chapter. Antiphon, Thrasymachus and Callicles, as theorists of human nature, make the distinction between νόμος and φύσις within the actual realm, stressing the validity of φύσις as the appropriate starting point for methodology. Callicles shares with Thrasymachus and Antiphon the conviction that the rules of φύσις are distinct from those of νόμος, and is explicit in his insistence that they each have their own language. He notices that speakers are unfairly forced to contradict themselves when Socrates frames his question in the language of φύσις in response to their speaking in the language of νόμος, because the two frameworks are generally speaking opposed to one another.[419] Callicles' detection of this prevents the dialogue from following the pattern of Book One of *Republic*, in which Thrasymachus and Socrates argue at cross-purposes. Instead, the debate moves forward into a discussion of this distinction, with Socrates arguing that it is an artificial one.[420] This would explain the slight divergence between Callicles' and Thrasymachus' theories, in spite of their similar methodologies.

Callicles' observations of human behaviour and φύσις in general lead to his political realism. He thinks that φύσις demonstrates

> ...that it is right that the better man should have more than the worse and the stronger than the weaker.[421]

Callicles' laws of φύσις possess a generality that allows them to describe phenomena of varying proportions with the same principles. Callicles extends his analysis of individual behaviour and power relationships to include a theory of the state, and the relationship between states. He speaks of big cities attacking smaller ones in accordance with natural right,[422] a theme of great importance in our section

[418] Ibid 483d
[419] Ibid 482e-483a
[420] Ibid 489ab
[421] Ibid 483cd
[422] Ibid 483de

on Thucydides. Despite being Gorgias' pupil, Callicles condones the use of force in politics,[423] which is not Gorgias' own position.

Callicles' political realism is different from that of Thrasymachus, in that he believes that government is a coalition of the weak rather than the rule of the strong:

> Conventions...are made ...by the weaklings who form the majority of mankind [who] endeavour to frighten those who are stronger and capable of getting the upper hand...[424]

He also differs from Antiphon in his theory of the good life:

> I tell you frankly that what is fine and right by nature consists in this: that the man who is going to live as he ought should encourage his appetites to be as strong as possible instead of repressing them, and be able by means of his courage and intelligence to satisfy them in all their intensity by providing them with whatever they happen to desire.[425]

To Callicles, the good life requires unrestrained indulgence of the appetites, which is a more radical kind of hedonism than Antiphon's restrained pragmatism; he certainly does not sympathise with Socrates' ideal of self-mastery, believing that the moderate man is a half-wit.[426] He does not think that νόμος is a reflection of the natural law, as Thrasymachus does; nor is it merely impotent, as Antiphon thinks. Rather, it is a corruption of the laws of φύσις, as it inverts the power relationships of the natural order.

Callicles' political realism also contains a moral law, which we noted was absent from Thrasymachus' political theory. He thinks that the strongest should rule, and that right consists in their having more than the weak.[427] Indeed, this moral aspect of Callicles' theory is rather striking. He even speaks of the possibility of a kind of Saviour for φύσις, describing the rise of a man 'sufficiently endowed by nature':

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[423] Ibid 488b
[424] Ibid 483bc
[425] Ibid 491e-492a
[426] Ibid 491e
[427] Ibid 491d

> ...he will...by an act of revolt reveal himself our master instead of our slave, in full blaze of the light of the natural justice.[428]

Callicles makes such remarks because he believes that there exists a moral law in φύσις, which is quite independent of man's recognition or enactment of it.[429] In thinking this, he makes the step that Thrasymachus does not. Quoting Pindar, he actually uses the phrase we were so careful to avoid in our analysis of Thrasymachus, 'making might to be right.' [430] However, he shares with Thrasymachus a conception of ruling that divides the community into the strong and the weak.

Thucydides

Excepting a seven year 'peace', Athens' involvement in the Peloponnesian War with Sparta covers the years 431-404. Thucydides' book on the subject, *History of the Peloponnesian War*, is more than simply a history: it is an endorsement of an approach to history that derives from the methodology with which this Chapter is concerned. Indeed, Thucydides has been described as a political theorist rather than a historian,[431] although it might be more accurate to say that Thucydides is an analyst of political history.

We shall see that Thucydides' certainty that there is an objective reality discoverable by reason informs his approach to history. He believes that a rational approach, which is firmly rooted in evidence, and which rejects the mystical, may lead to an account of history that is valid, regardless of context. This approach, we shall see, is akin to those of other thinkers in this Chapter and antagonistic to relativism.

For Thucydides, reality may be said to exist in complete independence from us and it is possible to give an account of the world that is valid in any time or context.[432] He does not qualify his statements in relation to a particular framework,

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[428] Ibid 484a
[429] Ibid 483e
[430] Ibid 484b
[431] Jaeger [1939] Chapter 6
[432] Thucydides, *History of the Peloponnesian War* I.22

or say that opposing claims may be true for different people, as the relativists do. For him, consideration of the properties of the observer is useful as a means to negate the distortions it produces in our view of reality, as we saw in the thinkers in Chapter One. Unlike the relativists of Chapter Three, Thucydides thinks that it is possible to attain a truth that is not relative to one's own position. Thucydides must, therefore, take account of the positions of those who provide his evidence, while trying to write as though he has no 'position' himself:

> I have made it a principle not even to be guided by my own general impressions...Not that even so the truth was easy to discover: different eye witnesses give different accounts of the same events, speaking out of partiality for one side or the other or else from imperfect memories.[433]

Given that reality is independent of its observers, Thucydides decides that it can be known by strict loyalty to the evidence. The first thing to do is to reject the approach of the poets,

> ...who exaggerate the importance of their themes, or of the prose chroniclers, who are less interested in telling the truth than in catching the attention of their public, whose authorities cannot be checked, and whose subject-matter, owing to the passage of time, is mostly lost in the unreliable streams of mythology. [434]

Instead, Thucydides is not concerned about producing an account that is romantic or easy to read, but wishes to produce a factual account that is rooted in the evidence.[435] Nevertheless, Thucydides is honest enough to provide the reader with the tools to assess the validity of his own work. He admits that he finds it difficult to remember detail,[436] and that he sometimes finds it necessary to recreate events

[433] Ibid I.22
[434] Ibid I.21
[435] Ibid I.21
[436] Ibid I.22

> ...while keeping as closely as possible to the general sense of the words that were actually used, to make the speakers say what, in my opinion, was called for by each situation.[437]

This in itself shows a respect for the capacity of human intellect to discover the truth. Not only is he using his own critical faculties to write the account; he is also providing the reader with information with which to judge this report.

This respect for rationality goes hand in hand with his rejection of the mystical. Although the intellect can be relied upon to discover the truth, it must be isolated from the memory and emotion. Thucydides knows that people 'adapt their memories to suit their sufferings,'[438] and the historian must compensate for this. He remembers an old oracle that predicts:

> War with the Dorians comes, and a death will come at the same time.[439]

Considering the controversy as to whether the word in the ancient verse should be 'dearth' rather than 'death,' he notes that 'death' is the interpretation remembered by the Athenians at the time of the plague, but

> Certainly I think that if there is ever another war with the Dorians after this one, and if a dearth results from it, then in all probability people will quote the other version.[440]

Note the difference between this and the approach to oracles and religion taken by earlier historians like Herodotus. Although Herodotus acknowledges that some oracles can be ambiguous or wrong,[441] in many cases, he simply describes the oracular advice without Thucydides' cynicism.[442] Herodotus thinks that the gods do send omens to warn us,[443] and offers his own interpretations of divine signs.[444]

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[437] Ibid I.22
[438] Ibid II.54
[439] Ibid II.54
[440] Ibid II.54
[441] Herodotus, *Histories* V.92; VI.66; VII.6; VII.138-149
[442] Ibid I.47; VI.19; VI.77
[443] Ibid VI.98
[444] Ibid VII.57

Thucydides' rejection of the mystical is more similar to the approach taken by Ps-Hippocrates in his analysis of the cause of disease:

> I do not believe that the sacred disease is any more divine than any other disease but, on the contrary, has specific characteristics and a definite cause.[445]

The approach we have described so far follows the natural scientists' observation of the actual world in the acquisition of knowledge. Like Antiphon, Thucydides shares the Hippocratic ideal of gradually building up a picture of events based upon the evidence of the actual rather than the hypothetical. Unlike the relativists, he wishes to write a lasting, objective account. Thucydides' view is that an accurate history, valid in any context, can be written by rational consideration of the evidence. However, he wishes to analyse the cause of events as well as to record them, and, whether he admits it or not, this does involve some degree of interpretation. It is in this area that Thucydides deviates from the ideals of medicine and the natural sciences.

Thucydides does not diverge from the method of the natural sciences in the same way that Parmenides does: he is not using two opposites to say that events are caused by the presence of one and the absence of the other. Instead, he deviates from the approach taken in *On Medicine* by using a single principle with which to analyse political history. This principle is the role of power relations.

In his analysis of domestic politics, systems of government are assessed according to the distribution of power:

> Our constitution is called a democracy because power is in the hands not of a minority but of the whole people.[446]

Following the tradition of generalising descriptive principles to cover relationships on various scales, this method of analysis is extended to the relations between states in the international sphere. War is explained in terms of the

[445] Ps-Hippocrates, *The Sacred Disease* p 237
[446] Thucydides, *History of the Peloponnesian War* II.37

occurrence of imbalances of power, with the cause of the Peloponnesian War given as 'the growth in Athenian power and the fear which this caused in Sparta.'[447]

The deployment of the concept of power as an analytical tool is famously embodied in the Melian Dialogue of Book Five of Thucydides' *History*. This is written in dramatic form, making it possibly the best example of the creative skills to which Thucydides admits being forced to deploy. As such, we may reasonably conclude that this is the kind of thing that Thucydides feels 'called for' by the situation. The Athenians send an expedition to Melos, a colony from Sparta who refuse to join the Athenian Empire like the other islands and become open enemies of Athens. The Melians, after being warned by the Athenians to leave justice out of their account and confine themselves to the idea of self-interest, ask about the ideas of fair play of the Athenian subjects. The Athenian reply is most telling:

> ...if we were on friendly terms with you, our subjects would regard that as a sign of weakness in us, whereas your hatred is evidence of your power.[448]

Power is not a value to be chosen by the strong simply because they have the capacity to implement their own will, but a principle to which even the strong are bound regardless of whether or not they choose it. That is, there are certain principles that exist by nature: we do not create them by subscribing to them, as the relativists would wish to say. It is as vital for the security of the stronger party as it is for the imposition of their will on the weaker, as illustrated by the Athenians' belief that they cannot afford to ignore the demands of power politics, even if they wish to. Power politics is not something to which we may subscribe; it is something that *is*.[449] The very term 'power politics' is a tautology.

The idea that there is a natural law to which political relations necessarily adhere is not alien to Greek literature as a whole. Indeed, in his reflection upon Zeus' initial decrees, Aeschylus tells us that even the gods' political relationships are governed by a higher law. Zeus' policies are harsh because new power must

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[447] Ibid I.23
[448] Ibid V.95; Cf V.97; Cf V.89
[449] Cf Cleon's speech in the Mytilenian Debate, Ibid III.3741: the Athenians should put the Mytilenians to death for reasons of security.

always be so.[450] We begin to see that the rationality of the universe that was at first so empowering is actually indicative of universal limits that constrain us all. These limits that constrain the gods are even more restrictive in human affairs, because the gods are there to impose them.[451]

However, the respective use of the idea of power in the international sphere is another point of contrast between Thucydides and Herodotus. Herodotus does consider security as a possible justification for political action, when he describes Mardonius' argument that Xerxes should make war on Greece because it would add to his reputation, making others think twice before attacking his territory. However, unlike Thucydides, Herodotus does not believe that this is the essential explanation for political action. He says that Mardonius' real motivation is that he wishes to stir up trouble and become governor of Greece. Moreover, Xerxes is not convinced by that argument alone: he requires support from others and oracular advice before he reaches a decision.[452] Conversely, Thucydides unifies the idea of natural limits that govern human behaviour by the use of a single principle. He thinks that the natural law may be explained in terms of power relationships and the security implications that derive from these.

The real aim of policy, for Thucydides, is 'positive preponderance of power in action.'[453] As a result, the role of morality in politics is merely 'a great mass of words that nobody would believe.'[454] Note that the Athenians' response is given in terms of interest, not righteous anger about the Melians' previous refusal to ally with them. Morality clouds the debate, robbing the policy maker of accuracy and integrity:

> ...you seem to us quite unique in your ability to consider the future as something more certain than what is before your eyes, and to see uncertainties as realities, simply because you would like them to be so.[455]

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[450] Aeschylus, *Prometheus Bound* 35
[451] Aeschylus, *The Persians* 800-836; Cf Herodotus, *Histories*: The gods set limits on human behaviour and arrogance and ambition can lead to downfall, II.120 and VII.101-105 respectively.
[452] Herodotus, *Histories* VII.5-6
[453] Thucydides, *History of the Peloponnesian War* V.109
[454] Ibid V.89
[455] Ibid V.113

This is a marked contrast to the kind of motivation that Herodotus ascribes to political actors, which frequently revolves around morally-charged arguments like retribution.[456] For Thucydides, these arguments do not represent the political reality.

In recognising this, Thucydides consents to the distinction drawn between νόμος and φύσις by Antiphon, Thrasymachus and Callicles. Morality is placed firmly in the realm of convention, but a closer analysis will show it to be a case of fine phrases and wishful thinking. Φύσις is more real: it may claim the certainty of 'what is before our eyes' in virtue is its ability to be observed. It is also notable that there are hints of Callicles' theory that the weak collaborate for their own interest in Thucydides.[457]

Thucydides' reconstruction of the Melian Dialogue is a representation of what he thinks is called for by the speakers: it is unclear to what extent the views of the Athenians represent his own. For this reason, we should hesitate to call him a political theorist. However, he clearly recognises the importance of this type of argument in politics. Moreover, his analysis of each situation in terms of power relationships, rather than right action or consent, does show him to be an analyst of political history with leanings towards political realism. This is a result of his wish to build his account upon observations of actualities, for his reconstruction of what is called for in the Melian Dialogue is certainly based upon a similar theory of human nature to that of the political realists.

For the political realist, there is a Law of Nature, which determines the nature of political relationships. This Law is discernable through observation of actuality, rather than through conceptual analysis, and parallels may be drawn between the laws that govern individual, domestic and international affairs. This exhibits a faith in the generality of the Law of Nature over varying scales, similar to that of the natural scientists of Chapter One. Although knowledge of this Law is to some extent empowering, its existence necessarily constrains even those who possess political power. Thus, the methodology of the political realists has more in common with that of the natural sciences than that of the relativists. Consequently,

[456] Herodotus, *Histories* VII.8,11
[457] Thucydides, *History of the Peloponnesian War* V.90

political realism may never be seen as 'the next step' from moral relativism, due to its radically opposed methodology.

Conclusion

We have seen that, from a growing faith in the rationality of the universe, two distinct traditions develop in the fifth century methodological debate. The Milesians begin to explain the world around them in terms of principles grounded in reason, rather than in divine revelation. These explanations exploit the shared properties of identical and proportionately similar entities, for example triangles, in the case of Thales' method of measuring the distance of ships from the shore. The subsequent epistemological debate proposes two distinct methods for the expansion of these rules: the thought experiment and the physical experiment or observation.

The thought experiment makes extensive use of the conditional sentence. Xenophanes asks what our judgements of the world would be like if it had been made so that our experiences were different. Heraclitus asks, 'if the world were different, how would we experience it?' Parmenides also uses conditionals in his thought experiments: 'if the one is not, nothing is.'[458] In addition, Heraclitus and Parmenides both use opposites as epistemological tools. Heraclitus sees entities as pairs of component opposites, whereas Parmenides uses mutually exclusive opposites to set the parameters in his intellectual γυμνασίας. The thought experiment is developed by Zeno, who applies the use of opposing claims to opposing contexts, the structure of which at least implies conditionality. Democritus also uses opposing claims in conditional sentences and the Pythagoreans develop a system of mathematical proofs based upon the incompatibility of opposing properties, and using conditionals to determine which property is correct.

The physical experiment or observation exploits the principle of generality that Thales initiates. The natural scientists manipulate and observe entities in the physical world and form general rules to describe the behaviour of all such entities, and attribute identical properties to proportionate entities on differing scales. Unlike in the case of the thought experiment, the physical experiment or observation defers primarily to the physical world, preferring the accumulation of sense-evidence to conceptual analysis.

Our two groups of political theorists respond to the methodological debate in disparate ways. The relativists note that there is no ultimate framework within

[458] Plato, *Parmenides* 137c

which to make our inquiries. While mathematics faces the challenge of describing a world from which it is distinct, Protagoras argues that proof by contradiction is only useful as a means to relative, not absolute truth. We may argue from a premise, but our conclusions must then be relative to that premise: they may never stand alone. Gorgias supports this in Περί Φύσεως, with his critique of language as an inadequate framework to describe the world. He demonstrates that the use of conditional sentences and opposing claims may be used to negate the claims that others who use this method wish to support. The treatise illustrates how a claim based upon the assumption of a premise may be valid, even if the premise itself is not so. Finally, Euthydemus and Dionysodorus build upon these claims by treating language as distinct from the world it describes: so in an eristic display, they feel quite justified in making claims that do not reflect the physical reality, as long as they are linguistically correct. These thinkers tend naturally towards conservatism, because there is no universally valid conceptual scheme to challenge the established order.

The political realists believe that such a scheme does exist: it is to be found in φύσις. They use a methodology similar to that of the natural scientists to explain political behaviour, preferring to cite observations from the actual world to conceptual analysis. Not content to begin from the premises of νόμος, as the relativists do,[459] the political realists seek the Laws of φύσις, which govern the nature of political relationships. These Laws are universal: they apply to political relationships on all scales: the individual, the domestic and the international.

Such different methodologies necessarily lead to different political theories: conservatism and political realism respectively. We have already noted the very different conceptions of political power held by the proponents of each. The Protagorean-Gorgian conception, in which power is a good because it enables one to partake in the political life of the community, is particularly conservative. It sees the political community as an organic whole, which we have already noted is consistent with traditional Athenian institutions and processes. Speech and action are seen as a means to power, which is exerted within a community, rather than imposed upon it. Indeed, this conception of power appears in Homeric literature.[460] This conservative

[459] Although the relativists provide a critique of νόμος by asserting that it is not an absolute, universal truth.
[460] *Iliad* IX.443; Cf Chapter Three, section on Gorgias.

approach arises from a relativist methodology because, in the absence of a universal scheme, νόμος is the default starting point.

Conversely, the political realists' conception of power includes the division of the domestic and international communities into conflicting groups. To illustrate this, it is notable that Thucydides' use of the concepts of action and debate are seen as divisive. Pericles is described as 'the the most powerful both in action and debate.'[461] Pericles claims to share the conception of the undivided community that we identified as particularly conservative:

> My own opinion is that when the whole state is on the right course it is a better thing for each separate individual than when private interests are satisfied but the state as a whole is going downhill.[462]

However, Thucydides is cynical of Pericles' claim: he thinks that there is a distinction to be made between the ruler and the community, especially insofar as Pericles is concerned:

> In what was nominally a democracy, power was really in the hands of the first citizen.[463]

The political realists as a whole feel justified in making this divide, because they do not wish to begin their inquiries from νόμος. They see φύσις as a valid alternative to νόμος, and believe that their observations of φύσις provide evidence that such a divide exists. Such assertions are anathema to a relativist approach.

This is the most theoretically economical explanation: the relativists differ in policy from the political realists because the former conduct their inquiries within the metaphysical realm of conceptual analysis; the latter are social scientists, preferring the physical realm of actual behaviour. It is a distinction that survives in Greek political thought, evident in the antagonism between Platonic *universalia ante rem*[464] and Aristotelian *universalia in rebus*.[465]

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[461] Thucydides, *History of the Peloponnesian War* I.139
[462] Ibid II.60
[463] Ibid II.65
[464] Plato, *Republic* 509b
[465] Aristotle, *Physics* 192b21-23

The implications of this are threefold. Firstly, we have at least partially rescued the Sophists and their associates from accusations of intellectual fraud. A common portrayal of the Sophists in the fifth century is epitomised in Aristophanes' *Clouds*, in which the shape-shifting clouds are used as a metaphor for the unreliability of the Sophists' pronouncements. We have seen that these thinkers do have genuine points to make, based upon discriminating responses to the intellectual debates of the time. Secondly, we have seen that attending to the respective methodologies of the thinkers can explain why their political theories are so different, and confirms that political realism cannot derive from a relativist foundation. In short, the denial of absolute moral truths is not the origin of the kind of policies which result in the slaughter of one thousand revolting Lesbians.[466]

This brings us on to our third point: the implications for contemporary political theory. We have said enough to refute the irrational and frankly unhelpful objection to moral relativism, that it is necessarily a 'dangerous' theory leading to unpalatable policies. In fact, as we have seen, it is no such thing; quite apart from the fact that no academic debate should attempt to refute a theory upon the grounds that its opponents dislike the results.

There are many different ways to form a political theory; we have considered just two.[467] Consider recent attempts to reform the discipline of politics into a 'social science,' which follows the model of the natural sciences. In the light if this paper, we may reflect that this model is not the only method of constructing a political theory; nor is it at all clear that it is the most apt.

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[466] Thucydides, *History of the Peloponnesian War* III.50: the Athenians put to death over a thousand Lesbians deemed responsible for the revolt of Mytilene, although this figure may be called into question.

[467] See Lloyd [1966]

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